1990 ALBERTA HOUSE COST COMPARISON STUDY

Executive Summary

Single Detached Dwelling
24 Unit
Walk-up Apartment

Alberta
MUNICIPAL AFFAIRS
Housing Division

1990 ALBERTA HOUSE COST COMPARISON STUDY

EXECUTIVE SUMMARY

OCTOBER 1990

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PREFACE

The purpose of the 1990 Alberta House Cost Comparison Study is to estimate the hard construction costs of a typical single detached dwelling and a 24-unit walkup apartment building in ten urban centres across the Province.

The study also compares the current 1990 construction costs with those of previous years in the selected urban centres. Emphasis is given to comparing 1990 costs with 1989 costs and the study includes an analysis of the differences.

The study was carried out by the firm of Fairbrother Bennett Ltd. and is documented in three reports:

1990 Alberta House Cost Comparison Study:	Executive Summary
1990 Alberta House Cost Comparison Study:	Single Detached Dwelling
1990 Alberta House Cost Comparison Study:	24 Unit Walkup Apartment

Additional copies of any of these reports can be ordered from

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1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 Objectives

The objectives of the 1990 Alberta House Cost Comparison Study were:

1. To determine 1990 hard residential construction costs in ten selected urban centres in Alberta.
2. To determine reasons for differences in residential construction costs in the selected centres.
3. To carry out detailed comparisons of 1990 costs with 1989 costs in each centre.
4. To determine and comment upon residential construction cost trends over the last ten years in each centre.

1.2 Scope of Work

The 1990 Study examined the construction costs of a typical single detached house and a 24 unit walkup apartment building.

The study has been documented in three reports:

1990 Alberta House Cost Comparison Study: Executive Summary

1990 Alberta House Cost Comparison Study: Single Detached Dwelling

1990 Alberta House Cost Comparison Study: 24 Unit Walkup Apartment

This report is the Executive Summary.

1.0 INTRODUCTION

1.2 Scope Of Work - (continued)

The study examined construction costs in the following urban centres:

1. Calgary
2. Edmonton
3. Fort McMurray
4. Grande Prairie
5. Hinton
6. Lethbridge
7. Lloydminster
8. Medicine Hat
9. Peace River
10. Red Deer

The cost analyses of both buildings examined the construction cost differences between each of the centres and identified reasons for these differences with reference to such factors as:

a) material costs,

b) labour costs,

c) building features and inclusions,

d) construction specifications,

e) recent market activity and

f) other local factors as appropriate.

1.2 Scope Of Work - (continued)

The estimates of the single detached house for each centre include all structural, finishing, mechanical and electrical work as shown and specified on the drawings. They also include allowances for site overhead. Costs have not been included for the following items:

a) land cost and site clearance,
b) site servicing,
c) site development,
d) design fees and disbursements,
e) legal fees and disbursements,
f) marketing and real estate fees,
g) financing costs,
h) appliances (stove and refrigerator) and
i) general contractor's overhead and profit.

The estimates of the apartment building for each centre include all structural, finishing, mechanical and electrical work as shown and specified on the drawings. They also include allowances for site overhead and contractor's overhead and profit. Costs have not been included for the following items:

a) land cost and site clearance,
b) site servicing,
c) site development,
d) design fees and disbursements,
e) legal fees and disbursements,
f) marketing and real estate fees and
g) financing costs.

1.0 INTRODUCTION

1.3 Drawings

The drawings used in the study of the single detached house comprise:

1. Basement/foundation plan and main/upper floor plan.
2. Building elevations.
3. Building sections and specifications.

Reduced copies of these drawings are attached as Appendix A.

The drawings used in the study of the apartment building comprise:

1.	Site plan.	
2.	Foundation plan.	
3.	Basement floor plan	
4.	Main floor plan.	
5.	2nd and 3rd floor plan.	
6.	Building elevations.	
7.	Section and details.	
8.	Basement floor plan	- Mechanical layout.
9.	Main floor plan	- Mechanical layout.
10.	2nd and 3rd floor plan	- Mechanical layout.
11.	Basement floor plan	- Electrical layout.
12.	Main floor plan	- Electrical layout.
13.	2nd and 3rd floor plan	- Electrical layout.

Reduced copies of these drawings are attached as Appendix B.

1.0 INTRODUCTION

1.4 Approach

Costs are provided in this report under the headings of "Labour Item Cost" and "Material/Equipment Item Cost". The breakdowns between labour and material/ equipment costs have been generally provided by the applicable trade contractors. When these have been unattainable the labour costs have been determined by using labour rates established by the trade union concerned, or by the current market where trade union rates do not apply (the majority of cases). In all cases, realistic assessments have been made of current labour rates by examining the circumstances of the particular sub-trade involved. Material prices have been evaluated from discounted building material suppliers' lists and by competitive price quotations from trade contractors.

Prior to 1988 the single detached house had been a 100 square metre (1,076 sq.ft.) bungalow. In 1988 the design was updated to a four level split dwelling with 151 square metres (1,625 sq.ft.) finished on three levels plus an unfinished basement level and complete with an attached double garage. This was done so as to better represent current trends in the residential construction industry. Previous years' costs have been revised to accommodate this change and thus enable trends from earlier studies to remain applicable.

Cost data are assembled by sub-trade and presented in 21 trade categories for the house and 23 for the apartment plus a category for site overhead. The sub-trade operations are combined within each trade in order to reflect industry estimating practice.

All cost data, tabulations and graphs were processed on a micro-computer.

The cost effects of market forces and residential construction industry conditions are addressed in Section 1.5 "Findings".

1.5 Findings

Economic Factors

During the period of this study (October 1989 to October 1990) there have been major fluctuations in the levels of construction-related activity. The latter half of 1989 and the first three months of 1990 witnessed a significant increase in construction projects and planning, particularly in the major centres of Calgary and Edmonton, but also reflected to a lesser extent in Lethbridge, Grande Prairie and Hinton. This high level of activity resulted in shortages of labour in the major centres with a corresponding rise in labour costs.

The federal and provincial budgets brought down in early spring 1990 cut government spending on construction projects, in particular Alberta Public Works institutional and hospital projects. As an example, 90% of hospital construction in advanced stages of planning were frozen or scrapped. In addition the high interest rate policies of the Bank of Canada have deterred private investors from continuing to develop new projects. Public confidence in the economy has declined. The net result has been a nation-wide drop in real estate values since early 1990 which has further dampened the resurging interest of residential developers which was apparent in 1989.

Had this study been carried out six months earlier, in March 1990, the findings would likely have been significantly different in that they would have indicated larger increases in construction costs than contained in this report. This would be especially so in Calgary and Edmonton but also, to a lesser extent, in the smaller urban centres. As it is, the increases in October 1990 over October 1989 are relatively modest, being generally within one or two percentage points either way of general inflation as measured by the Consumer Price Index (6.2% for Calgary and 5.8% for Edmonton).

Cost increases are more attributable to labour cost increases than increases in material costs. In fact, some material prices, notably plywood, oriented strand board (OSB) and rough lumber, have dropped since a year ago. (It should be noted, however, that lumber prices vary from month to month and are influenced by overseas demand. The world-wide recession, affecting trading partners such as Japan, has contributed to keeping lumber price increases, as well as others, at a modest level).

1.5 Findings - (continued)

Labour

It is generally recognized that residential construction is performed by non-union labour. Rates paid by building contractors are driven by market forces. To a lesser extent they are influenced by union-negotiated rates for labour employed by governments, municipalities and certain industries.

The Merit Contractors' Association tracks the trends of rates paid to non-unionized labour in the major centres of Calgary and Edmonton. The most recent information provided by the Association is tabulated below. The hourly rates shown include payroll costs and all benefits.

	Calgary			Edmonton		
	1989	1990	% increase	1989	1990	% increase
Labourer	$12.82	$13.68	6.7%	$11.82	$12.83	8.5%
Carpenter	$17.58	$18.83	7.1%	$17.51	$18.60	6.2%
Electrician	$19.24	$20.69	7.5%	$18.64	$20.07	7.7%
Plumber	$18.42	$19.45	5.6%	$18.61	$20.11	8.1%

On average, according to Merit, Calgary labour rates have risen 6.75% and Edmonton's by 7.55%. The labour component of costs as reflected in Tables SD. 3 and WA. 3 generally reflects these increases. Actual labor cost increases will vary from centre to centre as the labour component of any particular trade is determined by market forces, reflected in trade contractor mark-ups, and not simply by actual wages and benefits paid to workers.

1.5 Findings - (continued)

Labour - (continued)

In the smaller centres, particularly Peace River, Hinton and Fort McMurray, the greater part of construction labour is provided by owner-operated companies with small, sometimes one-man, labour forces. Labour costs are affected by the activities of the primary industries in the areas around the cities such as pulp mills, lumber mills, mines and oil sand plants. Costs are invariably determined by current market conditions. With the exception of Lloydminster and Fort McMurray, prices in all the smaller centres are tempered by the fact that Calgary, Red Deer and Edmonton contractors sometimes compete successfully in these centres.

Materials

Material prices have increased modestly over the study period. In overall terms the increases have been less than general inflation. Certain items have, however, increased in price by up to 8%, including vinyl siding, concrete in some centres, floor coverings, and some finishing materials. Oil-related materials such as dampproofing and asphalt shingles were only beginning to reflect the impact of oil price increases resulting from the crisis in the Gulf. Rough lumber prices, on the other hand, as noted previously, were up to 10% lower in cost. Reinforcing steel had no significant increase. The higher fuel costs had also not yet impacted on contractors' overheads which are ultimately charged back into trade costs.

It should be noted that, while supplier prices may be higher or lower than the year previous, cost savings or increases to a particular trade contractor may not necessarily be passed on in full. Again, market forces determine the price.

1.5 Findings - (continued)

Apartment Construction

Following the downturn in 1981-82 construction of rental properties across Alberta virtually came to a standstill. Only in recent years has activity recommenced in Calgary and Edmonton and, to a much lesser extent, in Red Deer. In all other centres there has been insufficient demand for multi-unit rental buildings and it has not been an economic proposition for developers to build "on spec". Some town house, duplex and fourplex developments have occurred in some of the smaller cities, for example 22 duplexes are in the course of construction this year in Peace River by an Edmonton contractor, and these have been used for comparison purposes in this study.

There are indications that apartment construction could begin again in locations such as Grande Prairie, Hinton and Lethbridge. Construction costs, in real dollars, remain low and are expected to increase as soon as the present recession shows signs of abating.

Trends

The changes in costs since 1981 are depicted graphically in Chart SD.9 for the single detached house and Chart WA.11 for the apartment building. There are naturally regional variations in the trends, but it can be seen that in general terms costs to construct a single detached house have risen gradually over the past 7 years at rates in line with, or slightly exceeding, the general inflation rate as measured by the Consumers' Price Index. Costs of constructing an apartment building have, in real terms, generally remained constant over the past 7 years. The difference in the rates of increase could be related to the higher demand for single-family homes across the province than for apartment units as part of the continuing movement towards home ownership.

Tables SD.2 and WA.2 provide ratios of costs between the ten centres studied. No significant changes have taken place since last year's study, except that the greater increase in construction costs in Edmonton is reflected in lower ratios with all other centres. As could be expected there are significant regional factors affecting costs with the remoter centres (Fort McMurray, Peace River, Hinton and Grande Prairie) having the largest location factors.

1.5 Findings - (continued)

Highlights by Centre

Calgary	House	Apartment
Total cost of construction	$85,175	$832,328
Cost per square foot	$52.40	$41.64
Increase over 1989	5.1%	5.0%
Increase in labour cost	7.9%	6.6%
Increase in material/equipment cost	3.8%	4.2%

Calgary's single detached housing market has maintained the same high level of activity as a whole in 1990 as was begun in 1989. In both 1989 and 1990 total single-family housing starts have been over 60% higher than in the prior years of 1987 and 1988. Multiple unit starts have increased even more dramatically (333 units at the end of September 1990 compared with 319 units at the same time in 1989 and with 40 units in 1988). Calgary's population continues to rise at a fairly high rate (2.1% per annum, on average, since 1986) and this has fueled a demand for new housing. Much of the new construction, however, is aimed at the high end of the market.

At the beginning of the year activity was feverish and labour costs were escalating. The general economic downturn has resulted in a considerable tempering of activity. This has resulted in a significant reduction in labour costs, and, to a lesser extent, lower material costs due to lower mark-ups applied by the trade contractors. Costs of gravel used under slabs on grade, however, are significantly higher than the provincial average but this is offset by lower prices for ready-mix concrete.

Edmonton	House	Apartment
Total cost of construction	$82,193	$824,241
Cost per square foot	$50.57	$41.24
Increase over 1989	7.3%	5.5%
Increase in labour cost	9.6%	8.3%
Increase in material/equipment cost	6.4%	4.1%

1.5 Findings - (continued)

Highlights by Centre - (continued)

Edmonton - (continued)

The trend in Edmonton in terms of construction activity has essentially mirrored the trend in Calgary. The overall level of construction has, however generally been higher. There was more institutional and commercial building in Edmonton during 1990. Single-family housing starts, in fact, increased from 1989 levels despite the slowdown which has also affected Edmonton's construction industry in the latter part of 1990. Apartment unit starts also showed a significant increase over 1989. The result has been that Edmonton has experienced the greatest increase in costs of all centres studied, particularly labour costs.

Fort McMurray	House	Apartment
Total cost of construction	$91,572	$920,159
Cost per square foot	$56.34	$46.03
Increase over 1989	4.2%	5.1%
Increase in labour cost	6.9%	5.7%
Increase in material/equipment cost	3.1%	4.9%

Fort McMurray, along with Peace River, remains the most expensive centre in the province to build residential housing despite the fact that costs have not kept pace with inflation. The current increase in oil exploration and oil sands development caused by the crisis in the Gulf has not yet carried over into residential construction. The population of Fort McMurray has declined by 3.6% since 1986. This fact may be partly explained by redefinition of city boundaries but it is also reflected by the low number of new housing starts over the past three years. Low demand has the effect of depressing prices in real terms as can be seen graphically in Charts SD.9 and WA.11 for Fort McMurray.

Costs of concrete, dampproofing, siding, roofing, rough carpentry and heating all exceed the Provincial average by significant factors. Transportation costs due to the remote location are primarily responsible for the higher prices in these trades. In addition, there is far less of a competitive market than in the larger centres, the distance from Edmonton being too great to allow Edmonton contractors to compete for all but the more significant projects.

1.5 Findings - (continued)

Highlights by Centre - (continued)

Grande Prairie	House	Apartment
Total cost of construction	$88,544	$895,786
Cost per square foot	$54.48	$44.81
Increase over 1989	4.7%	3.9%
Increase in labour cost	6.7%	4.8%
Increase in material/equipment cost	4.0%	3.5%

Grande Prairie has experienced an average population increase of approximately 1% over each of the past four years. Single-family housing starts have been consistent over this period with an average of 146 new home starts each year although 1990 has experienced a modest decline over 1989. This level is substantially higher than at the first half of the 1980's when the economic recession had taken hold after 1981. The rise in costs is consistent with the steady activity. No apartment buildings, and very few multi-unit houses, have been constructed in Grande Prairie since the early 1980s. The city is only now opening up new residential areas for development after a period of eight years. The findings of this study are based, as with many of the smaller centres, on direct costing evaluation rather than on actual case histories. Costs, in real terms, have not kept pace with general inflation.

Hinton	House	Apartment
Total cost of construction	$87,963	$889,388
Cost per square foot	$54.12	$44.49
Increase over 1989	6.4%	4.7%
Increase in labour cost	8.5%	6.5%
Increase in material/equipment cost	5.5%	3.7%

Hinton's population has increased by almost 15% since 1986, probably as a result of expansion of local industries. This has generated a spurt in new single-family house construction over the past two years (from 3 starts in 1986 and 7 in 1988 to 10 in 1989 and 17 in the first nine months of 1990). There has been a corresponding increase in construction costs, mirroring the rise in Edmonton, the closest major centre. The increase in single family unit starts has not been followed by multi-unit developments which have not been built here since 1983.

1.5 Findings - (continued)

Highlights by Centre - (continued)

Lethbridge	House	Apartment
Total cost of construction	$84,490	$839,896
Cost per square foot	$51.98	$42.02
Increase over 1989	5.2%	5.0%
Increase in labour cost	7.6%	7.3%
Increase in material/equipment cost	4.2%	3.7%

Lethbridge's economy has been fairly stable over the past four years with a reasonably steady level of housing activity. Single-family housing starts this year were the highest, at 232 to the end of October, of recent years. Labour costs have kept pace with, or have exceeded inflation, reflecting a healthy economy buoyed by good harvests this year and last. Apartment building starts have been at the same modestly low level of 16 to 26 units over the past four years. With its proximity to Calgary, larger projects in Lethbridge are competitively bid by Calgary contractors.

Lloydminster	House	Apartment
Total cost of construction	$82,717	$855,126
Cost per square foot	$50.89	$42.78
Increase over 1989	4.7%	3.9%
Increase in labour cost	8.3%	6.0%
Increase in material/equipment cost	3.5%	2.8%

The Lloydminster economy has been sluggish and construction costs have not kept pace with general inflation. This is likely to change if the higher oil prices result in increased spending by oil companies and governments. Single-family housing starts have averaged three per month this year, an increase of 50% over 1989. This number is fairly low for the size of the city but may be a reflection of the fact that the population has not increased since 1986. No multi-unit apartments have been constructed in at least the past three years reflecting the low demand which exists for new residential units.

1.5 Findings - (continued)

Highlights by Centre - (continued)

Medicine Hat	House	Apartment
Total cost of construction	$84,447	$854,128
Cost per square foot	$51.96	$42.73
Increase over 1989	4.3%	5.1%
Increase in labour cost	6.0%	5.9%
Increase in material/equipment cost	3.7%	4.7%

Medicine Hat, located in the south-east corner of the Province, is generally not affected by the economies of the major centres. In many respects the comments applicable to Lethbridge also apply to Medicine Hat with the exception that it is 150 kilometres further removed from Calgary. Single-family construction activity has remained steady over the last four years, keeping pace with modest population increases. Apartment unit construction activity has dropped by 40% this year compared with the previous two years. Costs in real, inflation-adjusted dollars, have dropped, partly due to lower lumber prices and partly due to the lower demand.

Peace River	House	Apartment
Total cost of construction	$90,716	$926,606
Cost per square foot	$55.81	$46.36
Increase over 1989	6.3%	5.4%
Increase in labour cost	8.1%	6.3%
Increase in material/equipment cost	5.5%	4.9%

1.5 Findings - (continued)

Highlights by Centre - (continued)

Peace River - (continued)

Peace River, the smallest of the urban centres with a 1990 population of only 6,644, is also remote from larger centres. There was a jump in residential housing construction in 1989 as a result of the pulp mill expansion and this, along with its remote location, has kept costs at a high level. Local contractors are few in number and tend to be small, owner-operated concerns. It is significant to note that the two recent multi-unit complexes were built by outside contractors, one from Red Deer and the other from Edmonton. The Edmonton contractor bid successfully on a CMHC/AMHC project of 11 duplexes. His price was lower by 5% than the local competitors. Most of the building materials are trucked from Edmonton at a cost of $1.50 per mile per trailer load. It is also economical for an outside contractor to relocate labour temporarily to Peace River and to absorb transportation and accommodation charges.

Due to the relative proximity of Grande Prairie, many of the trade costs are only slightly higher than in Grande Prairie. Concrete prices are, in fact lower. Costs which significantly exceed the Provincial average are found in the mechanical and electrical trades, dampproofing, siding and doors.

Red Deer	House	Apartment
Total cost of construction	$83,501	$829,829
Cost per square foot	$51.37	$41.52
Increase over 1989	3.3%	3.1%
Increase in labour cost	2.6%	3.0%
Increase in material/equipment cost	3.6%	3.2%

Increases in Red Deer were the lowest of the centres studied. The reason is not immediately apparent since housing starts have been fairly consistent over the past four years but may be attributable to an oversupply of labour and a slow local economy. Apartment construction has been low for a city the size of Red Deer but reflects the low demand. Because Red Deer's labour costs and mark-ups on materials are lower than Calgary's, some local contractors have been successfully competing in Calgary and even further afield in centres such as Peace River.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

TABLE SD. 1 : TOTAL BUILDING COSTS (OCTOBER 1990 DOLLARS)

ITEM	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
Labour	$25,899	$24,394	$27,048	$25,751	$26,972	$24,266	$22,615	$24,139	$26,598	$24,445
%	30.4%	29.7%	29.5%	29.1%	30.7%	28.7%	27.3%	28.6%	29.3%	29.3%
Material	$59,276	$57,799	$64,524	$62,793	$60,991	$60,224	$60,102	$60,308	$64,118	$59,056
%	69.6%	70.3%	70.5%	70.9%	69.3%	71.3%	72.7%	71.4%	70.7%	70.7%
Total	$85,175	$82,193	$91,572	$88,544	$87,963	$84,490	$82,717	$84,447	$90,716	$83,501
Cost / m2	$564.07	$544.32	$606.44	$586.38	$582.54	$559.53	$547.79	$559.25	$600.77	$552.99
Cost / sq.ft.	$52.40	$50.57	$56.34	$54.48	$54.12	$51.98	$50.89	$51.96	$55.81	$51.37
1989										
Cost / sq.ft.	$49.88	$47.12	$54.08	$52.01	$50.87	$49.42	$48.59	$49.80	$52.53	$49.72
Total	$81,077	$76,582	$87,896	$84,533	$82,681	$80,327	$78,972	$80,946	$85,378	$80,810
% Change from 1989	5.1%	7.3%	4.2%	4.7%	6.4%	5.2%	4.7%	4.3%	6.3%	3.3%

2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

TABLE SD. 2 : COMPARATIVE COST RATIOS

LOCATION	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
CALGARY	1.00	0.96	1.08	1.04	1.03	0.99	0.97	0.99	1.07	0.98
EDMONTON	1.04	1.00	1.11	1.08	1.07	1.03	1.01	1.03	1.10	1.02
FORT McMURRAY	0.93	0.90	1.00	0.97	0.96	0.92	0.90	0.92	0.99	0.91
GRANDE PRAIRIE	0.96	0.93	1.03	1.00	0.99	0.95	0.93	0.95	1.02	0.94
HINTON	0.97	0.93	1.04	1.01	1.00	0.96	0.94	0.96	1.03	0.95
LETHBRIDGE	1.01	0.97	1.08	1.05	1.04	1.00	0.98	1.00	1.07	0.99
LLOYD-MINSTER	1.03	0.99	1.11	1.07	1.06	1.02	1.00	1.02	1.10	1.01
MEDICINE HAT	1.01	0.97	1.08	1.05	1.04	1.00	0.98	1.00	1.07	0.99
PEACE RIVER	0.94	0.91	1.01	0.98	0.97	0.93	0.91	0.93	1.00	0.92
RED DEER	1.02	0.98	1.10	1.06	1.05	1.01	0.99	1.01	1.09	1.00

NOTE The ratios represent the cost in a city in the top row of the table divided by the cost in a city in the left hand column. For example, costs in Grande Prairie are 1.05 times costs in Medicine Hat.

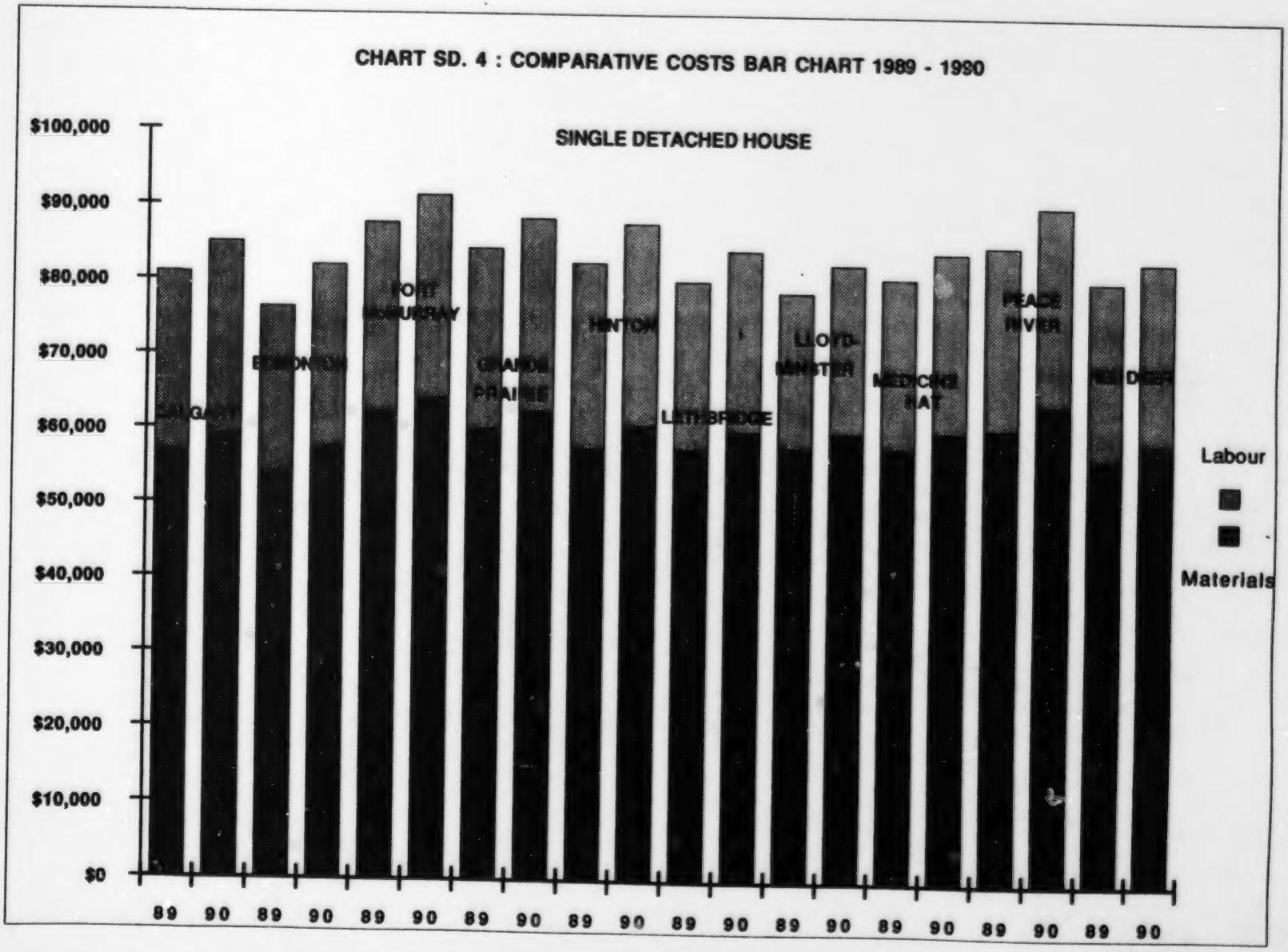
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

TABLE SD. 3 : COMPARATIVE COSTS 1989 - 1990

ITEM	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
Labour										
1990	$25,899	$24,394	$27,048	$25,751	$26,972	$24,266	$22,615	$24,139	$26,598	$24,445
1989	$23,993	$22,264	$25,307	$24,131	$24,865	$22,550	$20,876	$22,762	$24,604	$23,826
Difference	$1,906	$2,130	$1,741	$1,620	$2,107	$1,716	$1,739	$1,377	$1,994	$619
% Difference	7.9%	9.6%	6.9%	6.7%	8.5%	7.6%	8.3%	6.0%	8.1%	2.6%
Material										
1990	$59,276	$57,799	$64,524	$62,793	$60,991	$60,224	$60,102	$60,308	$64,118	$59,056
1989	$57,084	$54,318	$62,589	$60,402	$57,816	$57,777	$58,096	$58,184	$60,774	$56,984
Difference	$2,192	$3,481	$1,935	$2,391	$3,175	$2,447	$2,006	$2,124	$3,344	$2,072
% Difference	3.8%	6.4%	3.1%	4.0%	5.5%	4.2%	3.5%	3.7%	5.5%	3.6%
Total										
1990	$85,175	$82,193	$91,572	$88,544	$87,963	$84,490	$82,717	$84,447	$90,716	$83,501
1989	$81,077	$76,582	$87,896	$84,533	$82,681	$80,327	$78,972	$80,946	$85,378	$80,810
Difference	$4,098	$5,611	$3,676	$4,011	$5,282	$4,163	$3,745	$3,501	$5,338	$2,691
% Difference	5.1%	7.3%	4.2%	4.7%	6.4%	5.2%	4.7%	4.3%	6.3%	3.3%

2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 4 : COMPARATIVE COSTS BAR CHART 1989 - 1990



2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

TABLE SD. 5 : COMPARATIVE TOTAL BUILDING COSTS 1981 - 1990 (NOMINAL DOLLARS)

YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$67,692	$63,336	$63,888	$77,357	$71,449		$67,057		$66,506		$64,249
1982	$65,632	$59,030	$60,374	$74,016	$65,145	$67,935	$66,489		$67,367		$64,697
1983	$61,713	$55,930	$57,170	$68,848	$64,732	$63,491	$61,493		$62,923		$59,116
1984	$63,646	$56,877	$57,256	$72,242	$68,194	$66,316	$62,010	$67,798	$63,629		$58,496
1985	$64,852	$59,754	$59,633	$72,913	$68,469	$66,661	$63,181	$68,400	$63,250		$61,407
1986	$67,405	$61,803	$62,079	$76,445	$71,932	$70,209	$65,231	$69,692	$65,524		$63,733
1987	$74,644	$74,588	$67,421	$84,110	$77,854	$75,871	$71,516	$74,913	$72,150		$73,369
1988	$77,974	$76,851	$71,666	$85,137	$81,050	$78,542	$76,031	$76,401	$76,232	$82,080	$75,754
1989	$81,920	$81,077	$76,582	$87,896	$84,533	$82,681	$80,327	$78,972	$80,946	$85,378	$80,810
1990	$86,132	$85,175	$82,193	$91,572	$88,544	$87,963	$84,490	$82,717	$84,447	$90,716	$83,501

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.
4. Costs for years prior to 1988 have been adjusted from the bungalow design to the current 4-level split design.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

TABLE SD. 6 : COMPARATIVE TOTAL BUILDING COSTS 1981 - 1990 (INFLATION-ADJUSTED DOLLARS)

YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$102,134	$95,003	$96,922	$117,355	$108,392		$100,585		$99,758		$96,924
1982	$89,019	$79,057	$82,663	$101,342	$89,196	$93,016	$89,047		$90,223		$87,612
1983	$79,568	$71,749	$73,985	$89,098	$83,771	$82,165 .	$78,885		$80,720		$76,170
1984	$80,000	$71,184	$72,148	$91,032	$85,931	$83,565	$77,608	$85,432	$79,634		$73,461
1985	$79,120	$72,677	$72,884	$89,115	$83,684	$81,474	$76,845	$83,599	$76,929		$74,870
1986	$79,552	$72,627	$73,450	$90,447	$85,108	$83,069	$76,656	$82,457	$77,000		$75,151
1987	$84,661	$84,443	$76,555	$95,505	$88,402	$86,150	$80,965	$85,062	$81,682		$83,186
1988	$86,068	$84,717	$79,159	$94,038	$89,524	$86,754	$83,813	$84,389	$84,035	$90,662	$83,592
1989	$86,785	$86,104	$81,024	$92,994	$89,436	$87,476	$85,307	$83,552	$85,965	$90,330	$85,659
1990	$86,132	$85,175	$82,193	$91,572	$88,544	$87,963	$84,490	$82,717	$84,447	$90,716	$83,501

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.
4. Costs for years prior to 1988 have been adjusted from the bungalow design to the current 4-level split design.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

TABLE SD. 7 : COMPARATIVE SQUARE FOOT UNIT COSTS 1981 - 1990 (NOMINAL DOLLARS)

YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$41.65	$38.97	$39.31	$47.59	$43.96		$41.26		$40.92		$39.53
1982	$40.38	$36.32	$37.15	$45.54	$40.08	$41.80	$40.91		$41.45		$39.80
1983	$37.97	$34.41	$35.17	$42.36	$39.83	$39.06	$37.83		$38.71		$36.37
1984	$39.16	$34.99	$35.23	$44.45	$41.96	$40.80	$38.15	$41.71	$39.15		$35.99
1985	$39.90	$36.76	$36.69	$44.86	$42.13	$41.01	$38.87	$42.08	$38.91		$37.78
1986	$41.47	$38.02	$38.19	$47.03	$44.26	$43.20	$40.13	$42.88	$40.31		$39.21
1987	$45.92	$45.89	$41.48	$51.75	$47.90	$46.68	$44.00	$46.09	$44.39		$45.14
1988	$47.97	$47.28	$44.09	$52.38	$49.87	$48.32	$46.78	$47.01	$46.90	$50.50	$46.61
1989	$50.40	$49.88	$47.12	$54.08	$52.01	$50.87	$49.42	$48.59	$49.80	$52.53	$49.72
1990	$52.99	$52.40	$50.57	$56.34	$54.48	$54.12	$51.98	$50.89	$51.96	$55.81	$51.37

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.
4. Costs for years prior to 1988 have been adjusted from the bungalow design to the current 4-level split design.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

TABLE SD. 8 : COMPARATIVE SQUARE FOOT UNIT COSTS 1981 - 1990 (INFLATION-ADJUSTED DOLLARS)

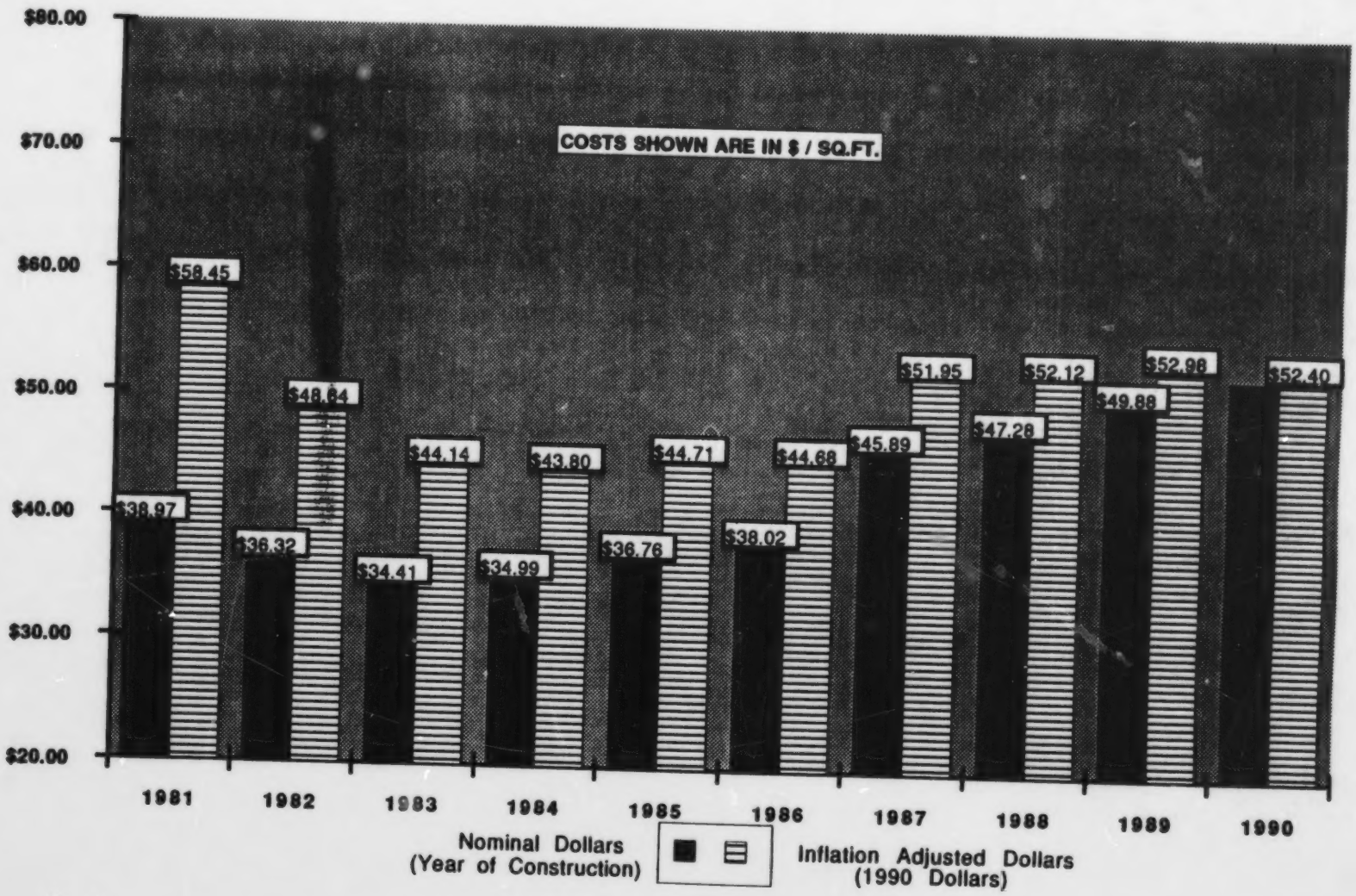
YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$62.84	$58.45	$59.63	$72.20	$66.69		$61.88		$61.38		$59.63
1982	$54.77	$48.64	$50.86	$62.35	$54.88	$57.23	$54.79		$55.51		$53.90
1983	$48.95	$44.14	$45.52	$54.82	$51.54	$50.55	$48.53		$49.66		$46.86
1984	$49.22	$43.80	$44.39	$56.01	$52.87	$51.41	$47.75	$52.56	$49.00		$45.20
1985	$48.68	$44.71	$44.84	$54.83	$51.49	$50.13	$47.28	$51.43	$47.33		$46.06
1986	$48.94	$44.68	$45.19	$55.65	$52.36	$51.11	$47.16	$50.73	$47.37		$46.24
1987	$52.09	$51.95	$47.10	$58.76	$54.39	$53.00	$49.81	$52.33	$50.26		$51.18
1988	$52.95	$52.12	$48.70	$57.86	$55.08	$53.38	$51.57	$51.92	$51.70	$55.78	$51.43
1989	$53.39	$52.98	$49.85	$57.21	$55.03	$53.82	$52.49	$51.41	$52.89	$55.58	$52.70
1990	$52.99	$52.40	$50.57	$56.34	$54.48	$54.12	$51.98	$50.89	$51.96	$55.81	$51.37

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.
4. Costs for years prior to 1988 have been adjusted from the bungalow design to the current 4-level split design.

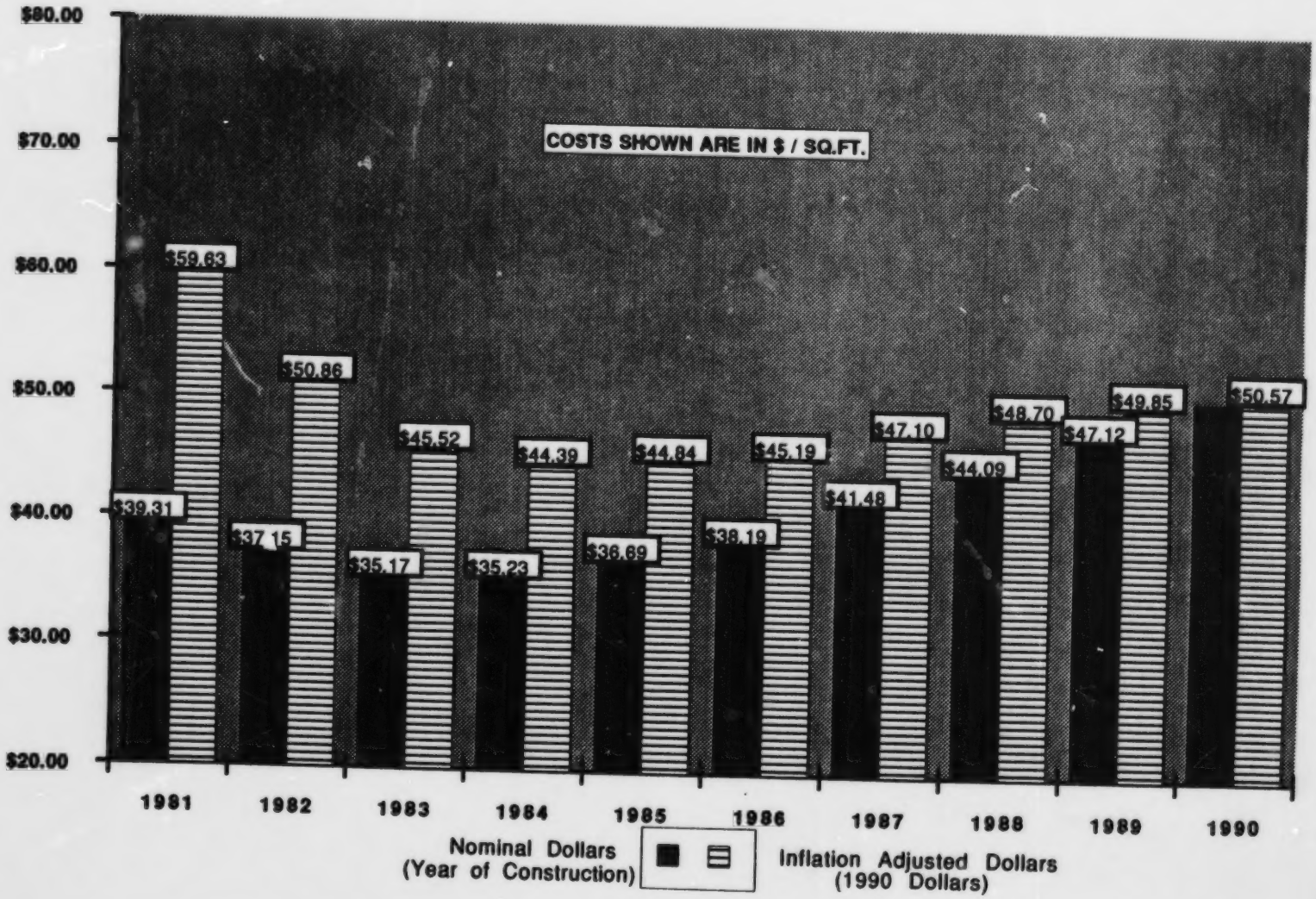
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : CALGARY



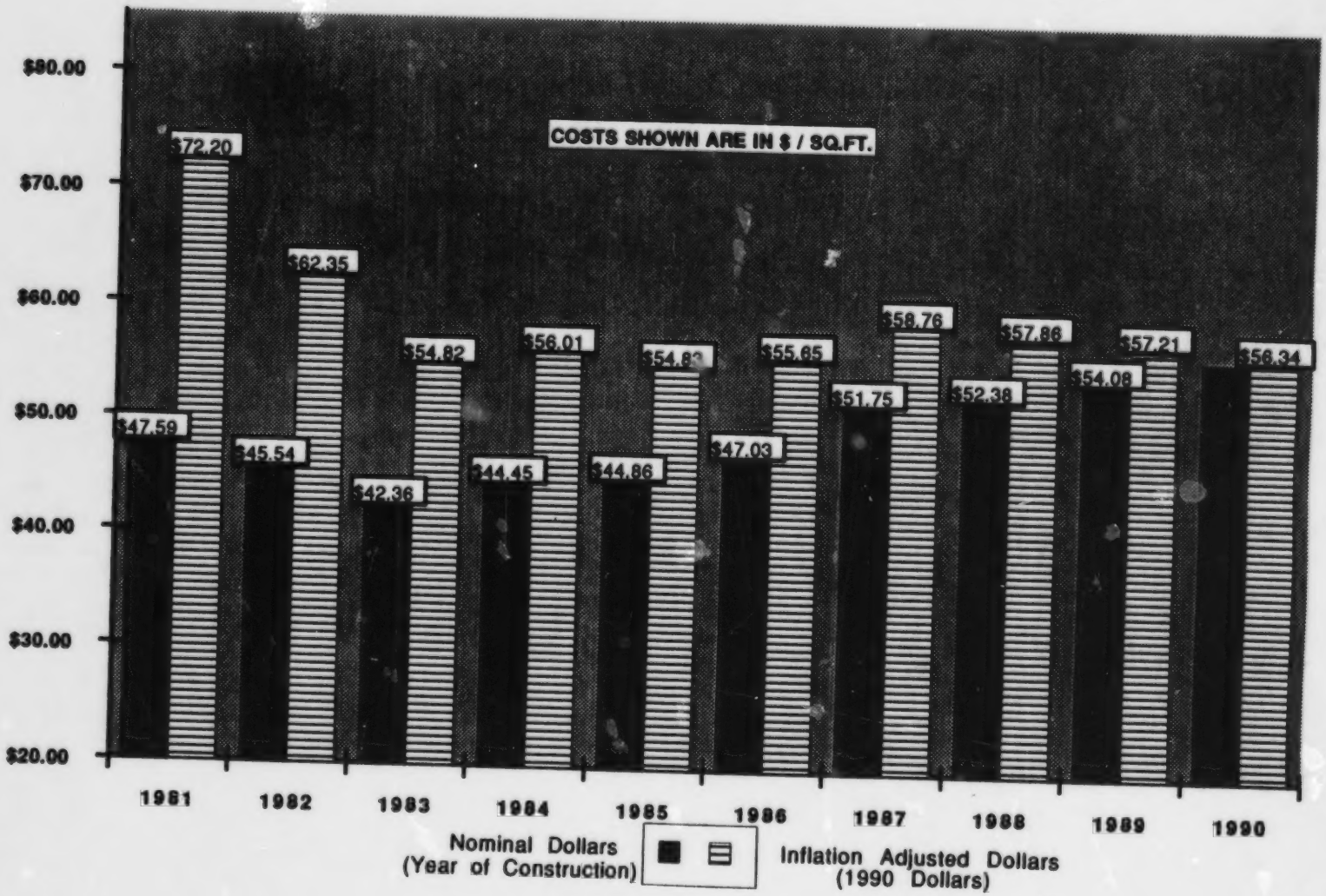
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ.FT. COSTS 1981 - 1990 : EDMONTON



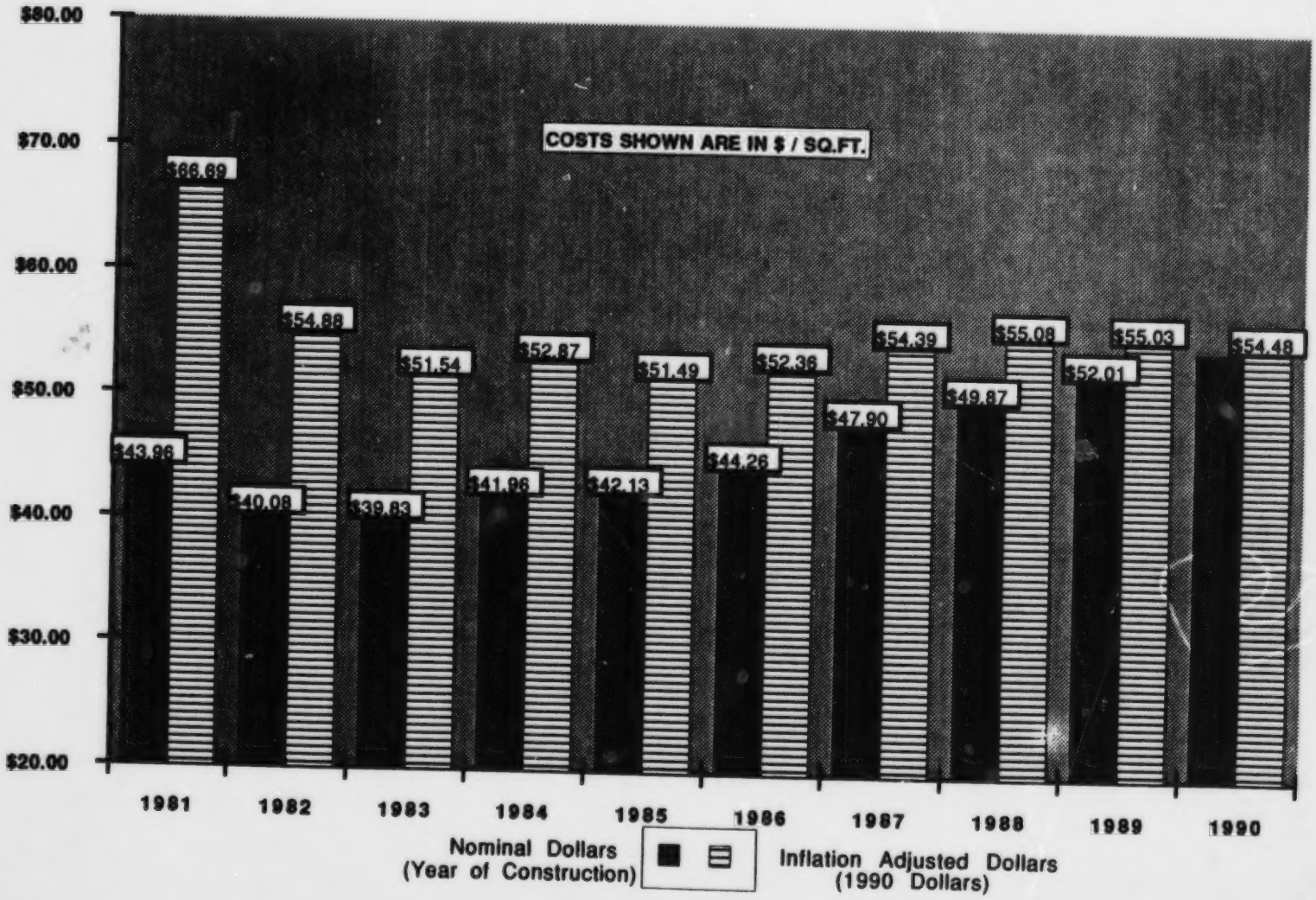
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : FORT McMURRAY



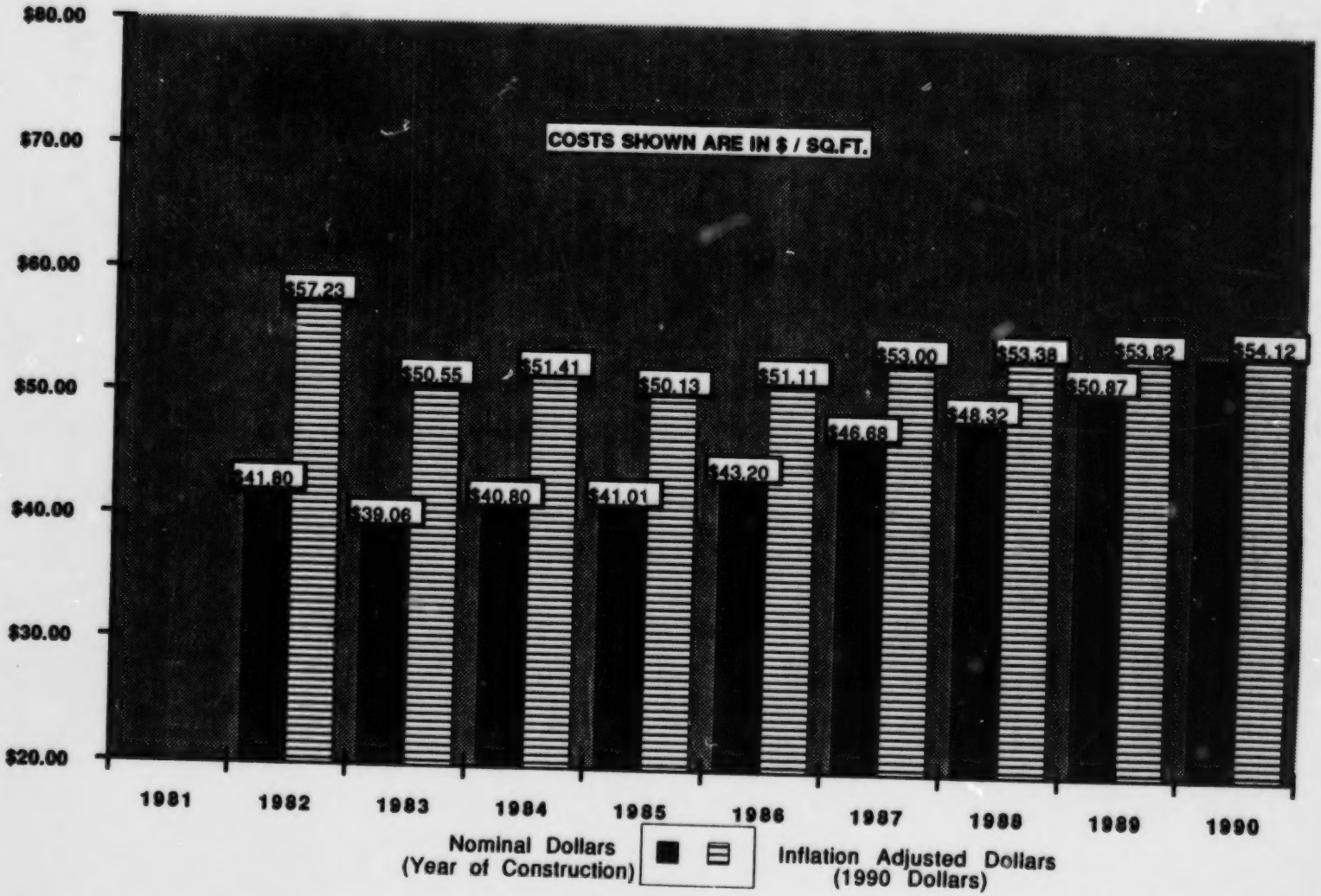
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : GRANDE PRAIRIE



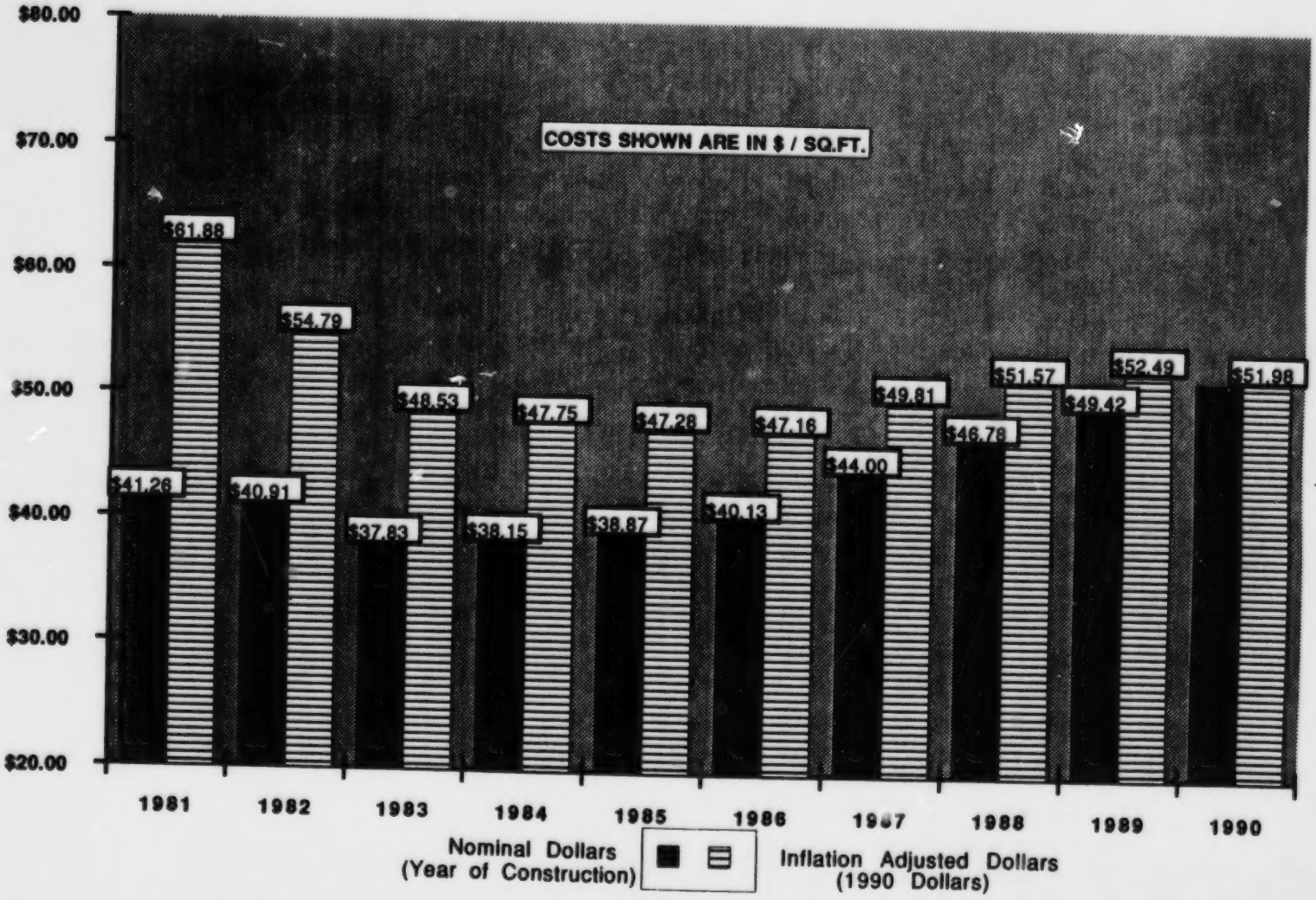
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : HINTON



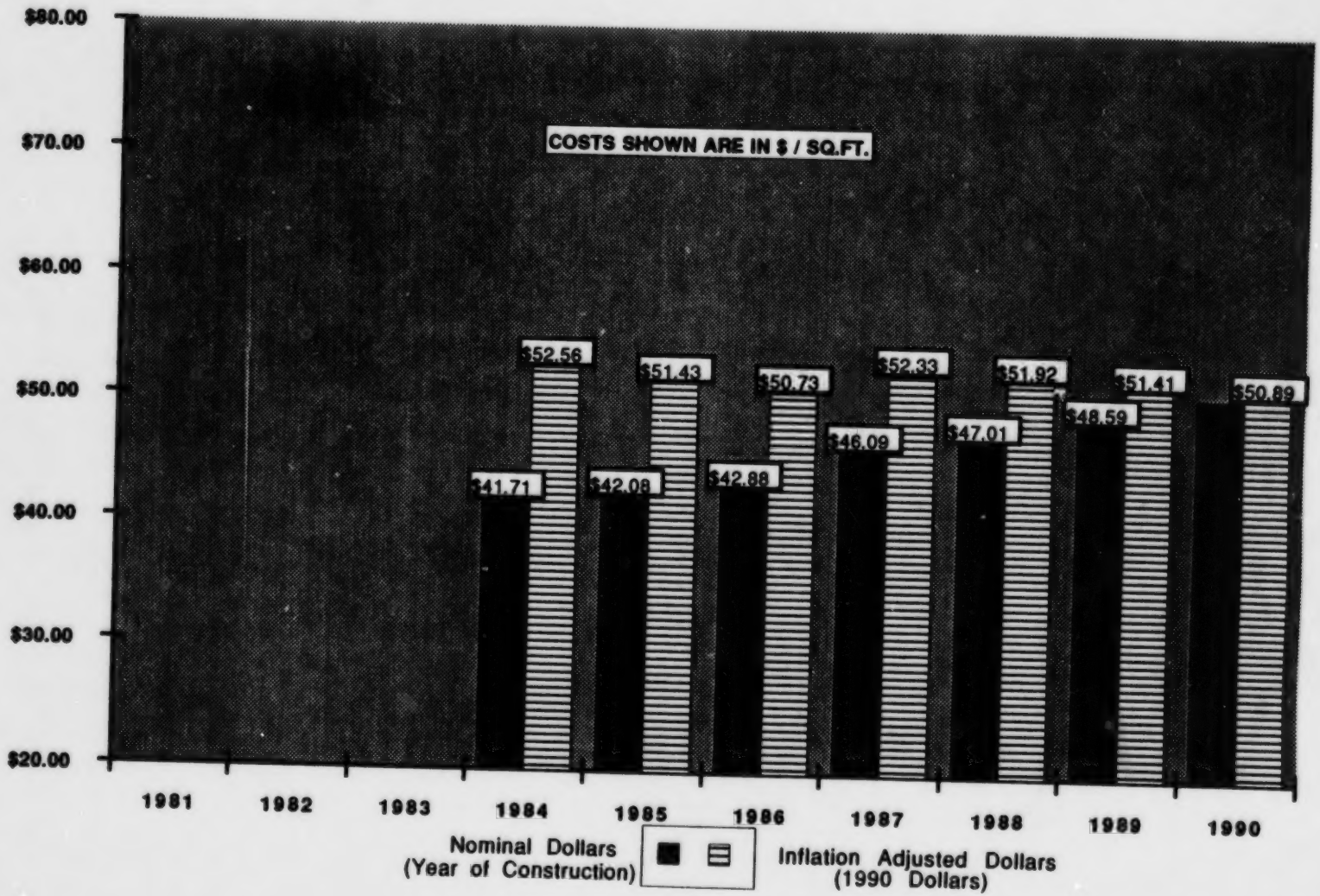
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : LETHBRIDGE



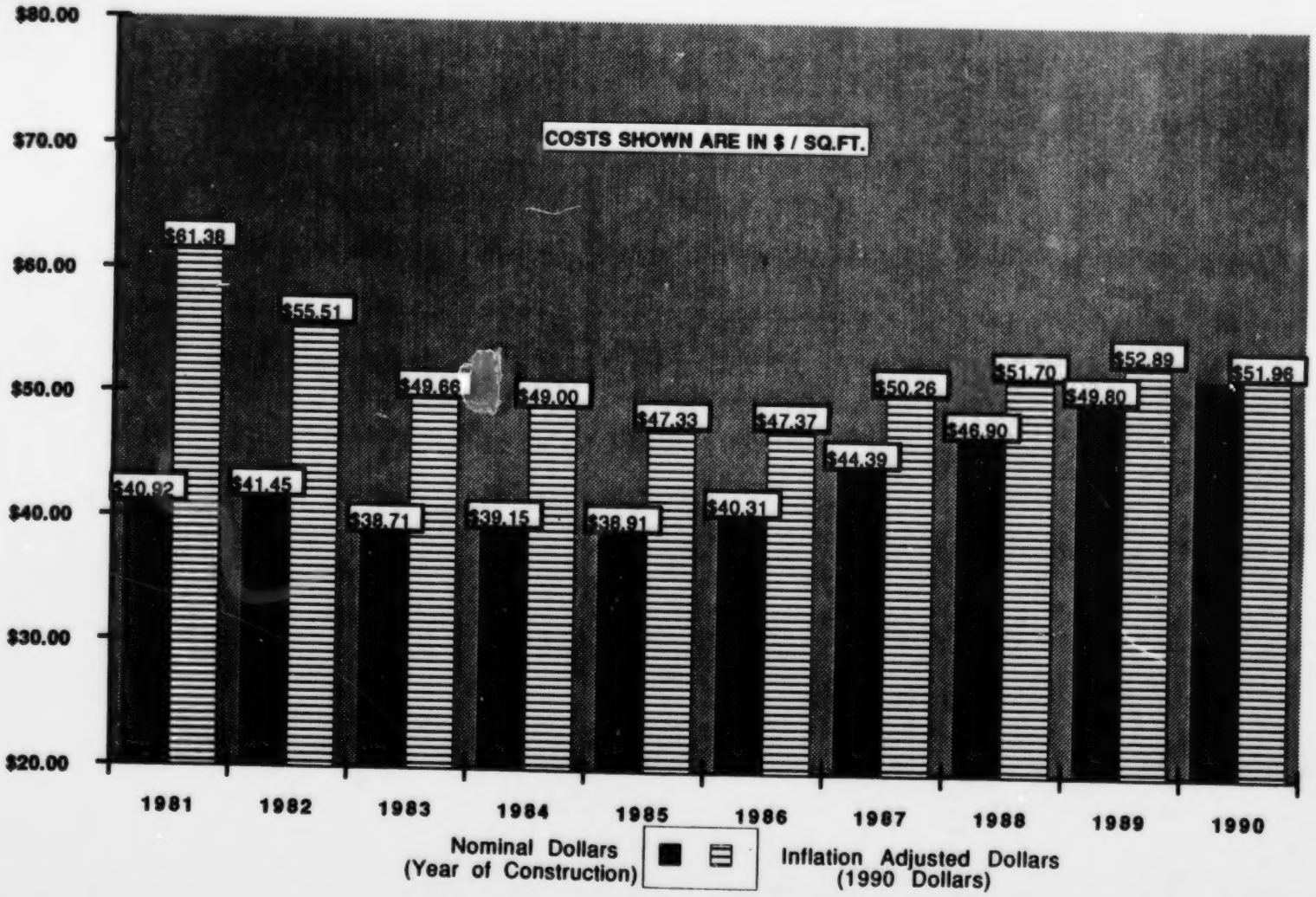
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : LLOYDMINSTER



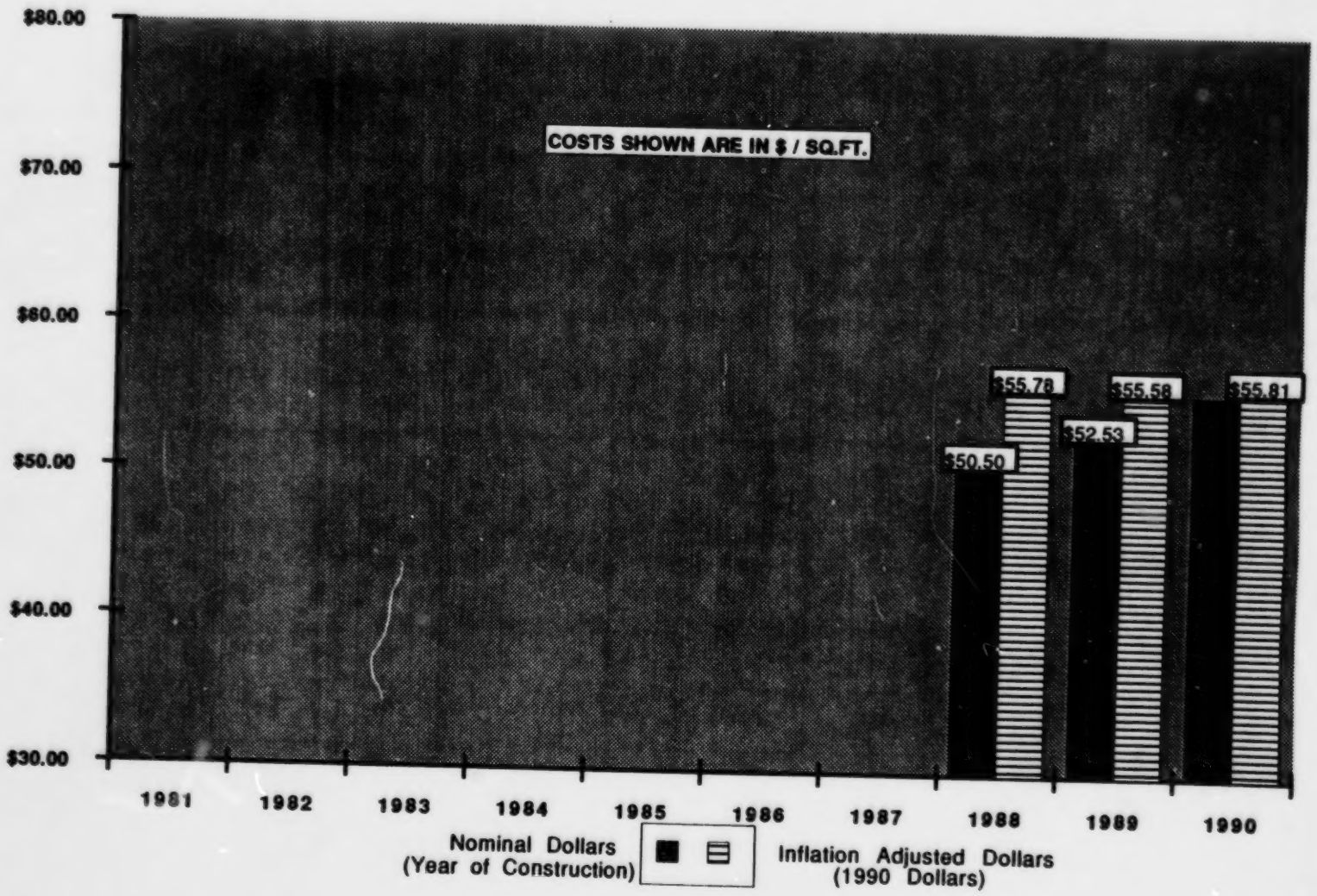
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : MEDICINE HAT



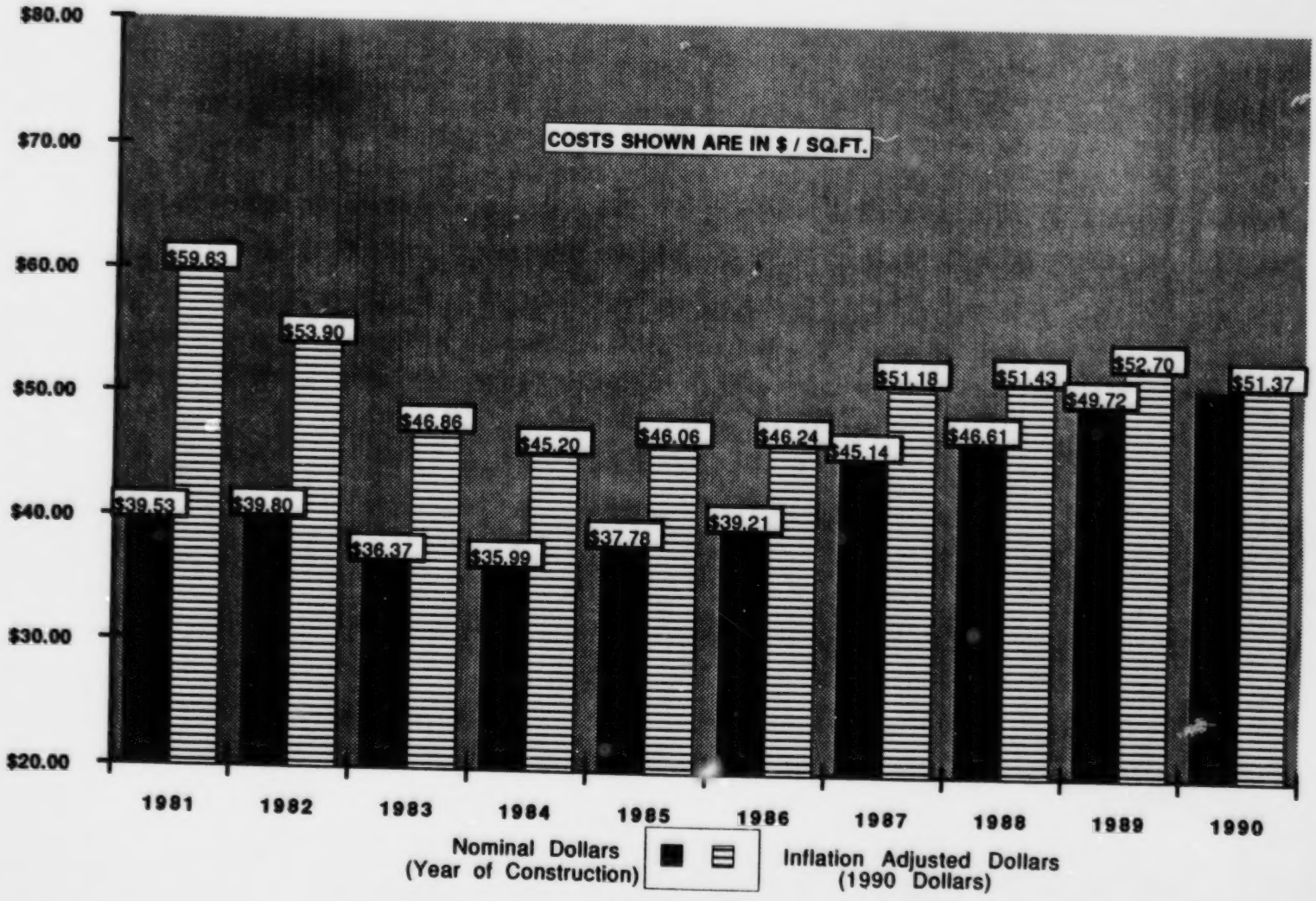
2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : PEACE RIVER



2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

CHART SD. 9 : COMPARATIVE SQ. FT. COSTS 1989 - 1990 : RED DEER



2.0 SUMMARY OF FINDINGS FOR THE SINGLE DETACHED HOUSE

TABLE SD. 10 : TRADE DIVISION COST SUMMARIES

TRADE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1 Excavation	$3,384	$2,724	$3,101	$3,190	$2,818	$3,207	$2,708	$3,234	$2,841	$2,895
2 Concrete	$10,460	$10,232	$12,490	$12,002	$12,206	$10,535	$10,711	$11,349	$11,320	$10,283
3 Dampproofing	$462	$457	$536	$496	$524	$508	$446	$464	$543	$478
4 Siding	$5,944	$5,757	$6,621	$6,339	$6,591	$5,840	$5,934	$5,928	$6,600	$6,052
5 Roofing	$2,198	$2,020	$2,088	$2,144	$1,920	$1,962	$1,928	$2,054	$2,156	$2,032
6 Rough Carpentry	$14,933	$14,481	$16,536	$15,277	$15,258	$15,004	$13,859	$14,097	$16,098	$14,538
7 Finish Carpentry	$2,525	$2,369	$2,419	$2,310	$2,373	$2,327	$2,209	$2,293	$2,354	$2,265
8 Windows/Glazing	$2,839	$2,822	$2,944	$2,954	$2,822	$2,830	$2,885	$2,869	$3,136	$2,872
9 Sealants	$106	$103	$103	$104	$110	$106	$104	$103	$111	$100
10 Doors	$3,391	$3,398	$3,810	$3,845	$3,635	$3,475	$3,516	$3,515	$4,009	$3,489
11 Hardware	$495	$487	$487	$495	$500	$480	$482	$485	$500	$487
12 Ceramic Tiling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
13 Wallboard	$6,978	$6,504	$7,417	$6,868	$7,230	$6,773	$6,992	$6,840	$7,326	$6,720
14 Flooring	$3,868	$3,808	$3,872	$4,156	$3,852	$3,758	$3,848	$3,850	$4,308	$3,840
15 Painting	$2,890	$2,764	$2,977	$2,943	$2,953	$3,045	$2,865	$2,882	$3,095	$2,858
16 Fittings	$4,700	$4,441	$5,150	$4,667	$4,481	$4,992	$4,563	$4,611	$5,096	$4,728
17 Specialties	$621	$625	$650	$649	$653	$621	$620	$617	$678	$629
18 Appliances	$115	$116	$126	$125	$132	$112	$129	$115	$127	$120
19 Plumbing	$6,280	$6,140	$6,645	$6,480	$6,585	$6,020	$5,868	$6,035	$6,770	$6,380
20 Heating	$3,150	$3,140	$3,405	$3,420	$3,260	$3,060	$3,060	$3,050	$3,498	$3,105
21 Electrical	$4,086	$4,055	$4,445	$4,330	$4,310	$4,085	$4,240	$4,306	$4,400	$3,880
22 Site Overhead	$5,750	$5,750	$5,750	$5,750	$5,750	$5,750	$5,750	$5,750	$5,750	$5,750
TOTAL	$85,175	$82,193	$91,572	$88,544	$87,963	$84,490	$82,717	$84,447	$90,716	$83,501

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALKUP APARTMENT

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 1 : TOTAL BUILDING COSTS (OCTOBER 1990 DOLLARS)

ITEM	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
Labour	$304,190	$300,349	$333,156	$324,814	$326,711	$301,273	$298,363	$303,161	$334,423	$300,177
%	36.5%	36.4%	36.2%	36.3%	36.7%	35.9%	34.9%	35.5%	36.1%	36.2%
Material	$528,138	$523,892	$587,003	$570,972	$562,677	$538,623	$556,763	$550,967	$592,183	$529,652
%	63.5%	63.6%	63.8%	63.7%	63.3%	64.1%	65.1%	64.5%	63.9%	63.8%
Total	$832,328	$824,241	$920,159	$895,786	$889,388	$839,896	$855,126	$854,128	$926,606	$829,829
Cost / m2	$448.21	$443.86	$495.51	$482.38	$478.94	$452.29	$460.49	$459.95	$498.98	$446.87
Cost / sq.ft.	$41.64	$41.24	$46.03	$44.81	$44.49	$42.02	$42.78	$42.73	$46.36	$41.52
1989										
Cost / sq.ft.	$39.64	$39.07	$43.78	$43.11	$42.51	$40.02	$41.18	$40.65	$43.99	$40.26
Total	$792,405	$780,927	$875,125	$861,785	$849,635	$799,968	$823,036	$812,537	$879,289	$804,745
% Change from 1989	5.0%	5.5%	5.1%	3.9%	4.7%	5.0%	3.9%	5.1%	5.4%	3.1%

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 2 : COMPARATIVE COST RATIOS

LOCATION	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
CALGARY	1.00	0.99	1.11	1.08	1.07	1.01	1.03	1.03	1.11	1.00
EDMONTON	1.01	1.00	1.12	1.09	1.08	1.02	1.04	1.04	1.12	1.01
FORT McMURRAY	0.90	0.90	1.00	0.97	0.97	0.91	0.93	0.93	1.01	0.90
GRANDE PRAIRIE	0.93	0.92	1.03	1.00	0.99	0.94	0.95	0.95	1.03	0.93
HINTON	0.94	0.93	1.03	1.01	1.00	0.94	0.96	0.96	1.04	0.93
LETHBRIDGE	0.99	0.98	1.10	1.07	1.06	1.00	1.02	1.02	1.10	0.99
LLOYD-MINSTER	0.97	0.96	1.08	1.05	1.04	0.98	1.00	1.00	1.08	0.97
MEDICINE HAT	0.97	0.97	1.08	1.05	1.04	0.98	1.00	1.00	1.08	0.97
PEACE RIVER	0.90	0.89	0.99	0.97	0.96	0.91	0.92	0.92	1.00	0.90
RED DEER	1.00	0.99	1.11	1.08	1.07	1.01	1.03	1.03	1.12	1.00

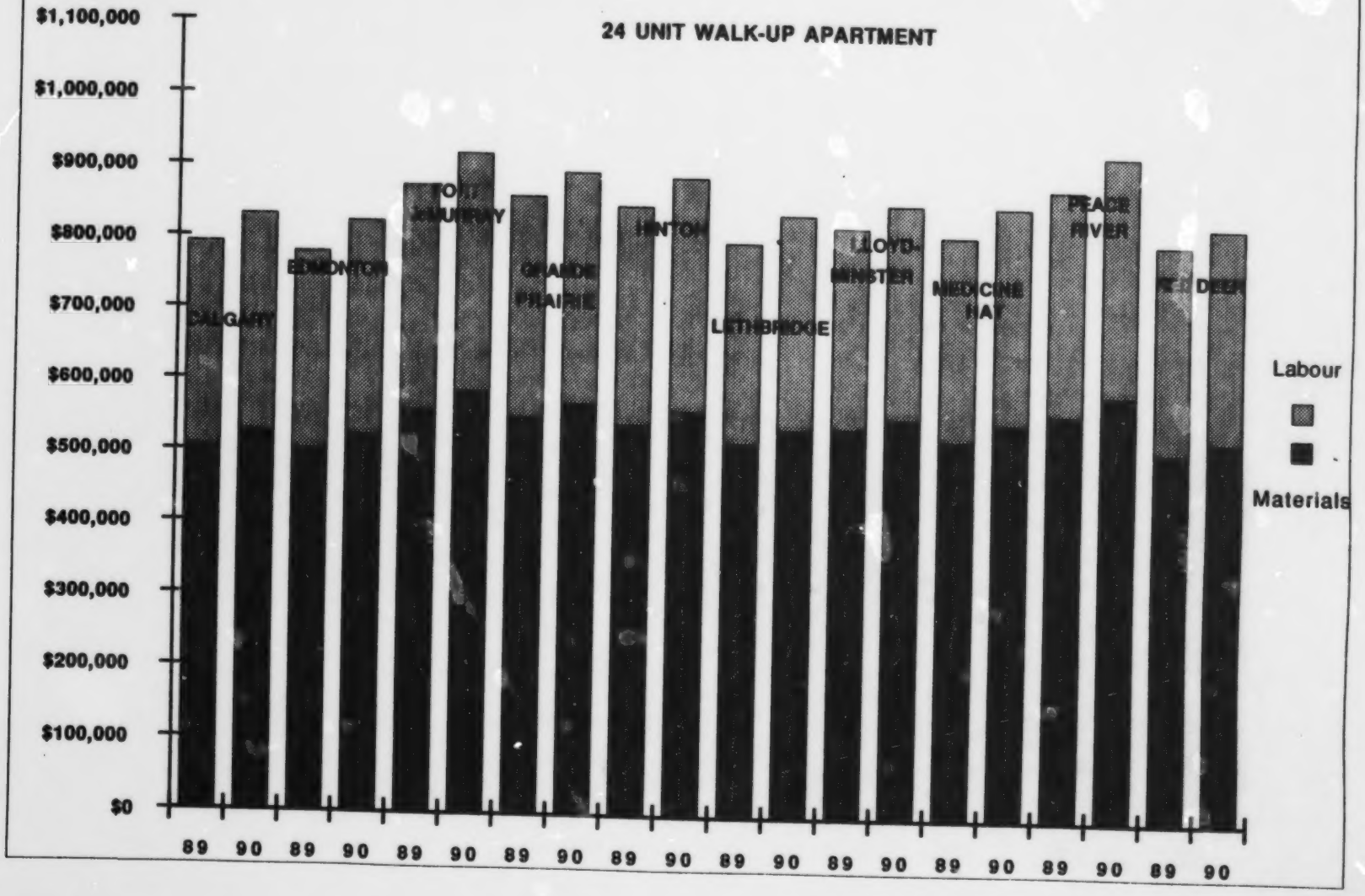
NOTE The ratios represent the cost in a city in the top row of the table divided by the cost in a city in the left hand column. For example, costs in Grande Prairie are 1.05 times costs in Medicine Hat.

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 3 : COMPARATIVE COSTS 1989 - 1990

ITEM	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
Labour										
1990	$304,190	$300,349	$333,156	$324,814	$326,711	$301,273	$298,363	$303,161	$334,423	$300,177
1989	$285,392	$277,437	$315,371	$309,972	$306,812	$280,749	$281,390	$286,400	$314,612	$291,534
Difference	$18,798	$22,912	$17,785	$14,842	$19,899	$20,524	$16,973	$16,761	$19,811	$8,643
% Difference	6.6%	8.3%	5.6%	4.8%	6.5%	7.3%	6.0%	5.9%	6.3%	3.0%
Material										
1990	$528,138	$523,892	$587,003	$570,972	$562,677	$538,623	$556,763	$550,967	$592,183	$529,652
1989	$507,013	$503,490	$559,754	$551,813	$542,823	$519,219	$541,646	$526,137	$564,677	$513,211
Difference	$21,125	$20,402	$27,249	$19,159	$19,854	$19,404	$15,117	$24,830	$27,506	$16,441
% Difference	4.2%	4.1%	4.9%	3.5%	3.7%	3.7%	2.8%	4.7%	4.9%	3.2%
Total										
1990	$832,328	$824,241	$920,159	$895,786	$889,388	$839,896	$855,126	$854,128	$926,606	$829,829
1989	$792,405	$780,927	$875,125	$861,785	$849,635	$799,968	$823,036	$812,537	$879,289	$804,745
Difference	$39,923	$43,314	$45,034	$34,001	$39,753	$39,928	$32,090	$41,591	$47,317	$25,084
% Difference	5.0%	5.5%	5.1%	3.9%	4.7%	5.0%	3.9%	5.1%	5.4%	3.1%

CHART WA.4 : COMPARATIVE COSTS BAR CHART 1989 - 1990



3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 5 : COMPARATIVE TOTAL BUILDING COSTS 1981 - 1990 (NOMINAL DOLLARS)

YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$756,703	$719,003	$714,492	$861,728	$784,409		$740,084		$743,992		$733,211
1982	$712,232	$627,844	$665,273	$805,134	$700,436	$744,686	$720,280		$723,716		$710,485
1983	$644,459	$592,174	$603,046	$712,262	$669,574	$674,046	$632,872		$647,845		$623,852
1984	$658,084	$591,861	$600,039	$731,995	$694,794	$693,688	$632,121	$701,901	$652,014		$624,342
1985	$669,882	$617,049	$625,974	$734,420	$695,480	$690,526	$651,143	$714,537	$655,347		$644,466
1986	$699,967	$647,135	$648,534	$778,075	$742,644	$731,043	$679,312	$730,802	$676,195		$665,963
1987	$754,246	$724,502	$693,517	$830,902	$791,155	$776,523	$728,692	$777,454	$731,429		$734,041
1988	$782,493	$744,420	$725,982	$847,835	$820,045	$799,979	$753,539	$790,103	$758,448	$837,124	$747,455
1989	$827,945	$792,405	$780,927	$875,125	$861,785	$849,635	$799,968	$823,036	$812,537	$879,289	$804,745
1990	$866,749	$832,328	$824,241	$920,159	$895,786	$889,388	$839,896	$855,126	$854,128	$926,606	$829,829

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 6 : COMPARATIVE TOTAL BUILDING COSTS 1981 - 1990 (INFLATION-ADJUSTED DOLLARS)

YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	1,141,700	1,078,496	1,083,925	1,307,290	1,189,993		1,110,117		1,115,979		1,106,098
1982	966,099	840,856	910,882	1,102,377	959,026	1,019,613	964,653		969,255		962,132
1983	$830,926	$759,659	$780,417	$921,756	$866,513	$872,300	$811,867		$831,075		$803,819
1984	$827,172	$740,739	$756,111	$922,389	$875,512	$874,118	$791,126	$884,467	$816,023		$784,065
1985	$817,257	$750,498	$765,074	$897,619	$850,026	$843,971	$791,966	$873,317	$797,079		$785,764
1986	$826,096	$760,474	$767,326	$920,595	$878,674	$864,948	$798,287	$864,663	$794,624		$785,275
1987	$855,479	$820,223	$787,474	$943,472	$898,340	$881,726	$824,967	$882,783	$828,065		$832,259
1988	$863,727	$820,616	$801,885	$936,478	$905,782	$883,618	$830,668	$872,710	$836,080	$924,647	$824,787
1989	$877,089	$841,534	$826,221	$925,882	$911,769	$898,914	$849,566	$870,772	$862,914	$930,288	$853,030
1990	$866,749	$832,328	$824,241	$920,159	$895,786	$889,388	$839,896	$855,126	$854,128	$926,606	$829,829

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 7 : COMPARATIVE COSTS PER APARTMENT UNIT 1981 - 1990 (NOMINAL DOLLARS)

YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$31,529	$29,958	$29,771	$35,905	$32,684		$30,837		$31,000		$30,550
1982	$29,676	$26,160	$27,720	$33,547	$29,185	$31,029	$30,012		$30,155		$29,604
1983	$26,852	$24,674	$25,127	$29,678	$27,899	$28,085	$26,370		$26,994		$25,994
1984	$27,420	$24,661	$25,002	$30,500	$28,950	$28,904	$26,338	$29,246	$27,167		$26,014
1985	$27,912	$25,710	$26,082	$30,601	$28,978	$28,772	$27,131	$29,772	$27,306		$26,853
1986	$29,165	$26,964	$27,022	$32,420	$30,944	$30,460	$28,305	$30,450	$28,175		$27,748
1987	$31,427	$30,188	$28,897	$34,621	$32,965	$32,355	$30,362	$32,394	$30,476		$30,585
1988	$32,604	$31,018	$30,249	$35,326	$34,169	$33,332	$31,397	$32,921	$31,602	$34,880	$31,144
1989	$34,498	$33,017	$32,539	$36,464	$35,908	$35,401	$33,332	$34,293	$33,856	$36,637	$33,531
1990	$36,115	$34,680	$34,343	$38,340	$37,324	$37,058	$34,996	$35,630	$35,589	$38,609	$34,576

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 8 : COMPARATIVE COSTS PER APARTMENT UNIT 1981 - 1990 (INFLATION-ADJUSTED DOLLARS)

YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$47,571	$44,937	$45,164	$54,470	$49,583		$46,255		$46,499		$46,087
1982	$40,254	$35,036	$37,953	$45,932	$39,959	$42,484	$40,194		$40,386		$40,089
1983	$34,622	$31,652	$32,517	$38,407	$36,105	$36,346	$33,828		$34,628		$33,492
1984	$34,466	$30,864	$31,505	$38,433	$36,480	$36,422	$32,964	$36,853	$34,001		$32,669
1985	$34,052	$31,271	$31,878	$37,401	$35,418	$35,165	$32,999	$36,388	$33,212		$32,740
1986	$34,421	$31,686	$31,972	$38,358	$36,611	$36,039	$33,262	$36,028	$33,109		$32,720
1987	$35,645	$34,176	$32,811	$39,311	$37,431	$36,739	$34,374	$36,783	$34,503		$34,677
1988	$35,989	$34,192	$33,412	$39,020	$37,741	$36,817	$34,611	$36,363	$34,837	$38,527	$34,366
1989	$36,545	$35,064	$34,426	$38,578	$37,990	$37,455	$35,399	$36,282	$35,955	$38,762	$35,543
1990	$36,115	$34,680	$34,343	$38,340	$37,324	$37,058	$34,996	$35,630	$35,589	$38,609	$34,576

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 9 : COMPARATIVE SQUARE FOOT UNIT COSTS 1981 - 1990 (NOMINAL DOLLARS)

YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$37.86	$35.97	$35.75	$43.11	$39.24		$37.03		$37.22		$36.68
1982	$35.63	$31.41	$33.28	$40.28	$35.04	$37.26	$36.03		$36.21		$35.54
1983	$32.24	$29.63	$30.17	$35.63	$33.50	$33.72	$31.66		$32.41		$31.21
1984	$32.92	$29.61	$30.02	$36.62	$34.76	$34.70	$31.62	$35.12	$32.62		$31.23
1985	$33.51	$30.87	$31.32	$36.74	$34.79	$34.55	$32.58	$35.75	$32.79		$32.24
1986	$35.02	$32.38	$32.45	$38.93	$37.15	$36.57	$33.99	$36.56	$33.83		$33.32
1987	$37.73	$36.25	$34.70	$41.57	$39.58	$38.85	$36.46	$38.89	$36.59		$36.72
1988	$39.15	$37.24	$36.32	$42.42	$41.03	$40.02	$37.70	$39.53	$37.94	$41.88	$37.39
1989	$41.42	$39.64	$39.07	$43.78	$43.11	$42.51	$40.02	$41.18	$40.65	$43.99	$40.26
1990	$43.36	$41.64	$41.24	$46.03	$44.81	$44.49	$42.02	$42.78	$42.73	$46.36	$41.52

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.

3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

TABLE WA. 10 : COMPARATIVE SQUARE FOOT UNIT COSTS 1981 - 1990 (INFLATION-ADJUSTED DOLLARS)

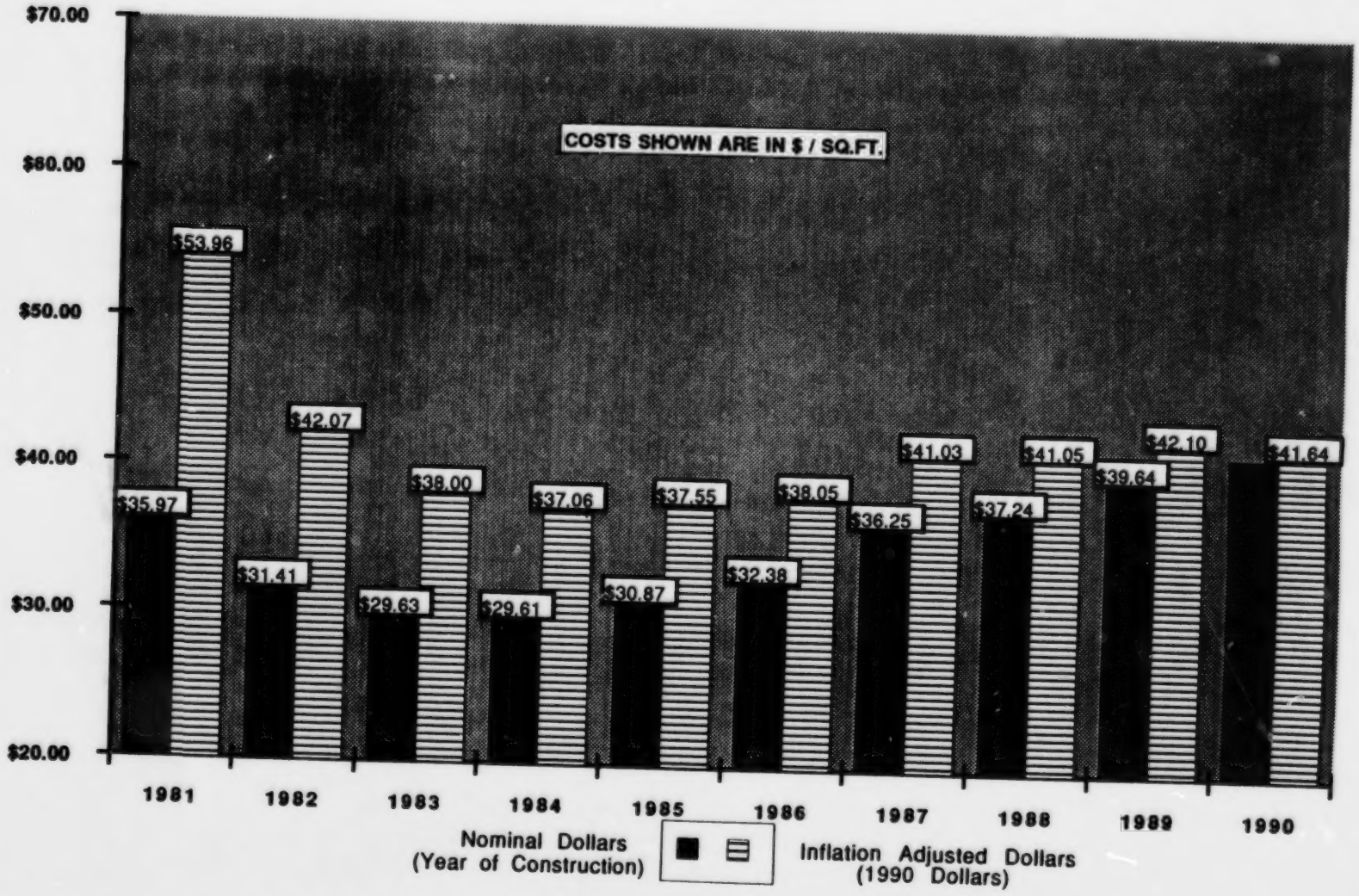
YEAR	AVERAGE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1981	$57.12	$53.96	$54.23	$65.40	$59.53		$55.54		$55.83		$55.34
1982	$48.33	$42.07	$45.57	$55.15	$47.98	$51.01	$48.26		$48.49		$48.13
1983	$41.57	$38.00	$39.04	$46.11	$43.35	$43.64	$40.62		$41.58		$40.21
1984	$41.38	$37.06	$37.83	$46.15	$43.80	$43.73	$39.58	$44.25	$40.82		$39.23
1985	$40.89	$37.55	$38.28	$44.91	$42.53	$42.22	$39.62	$43.69	$39.88		$39.31
1986	$41.33	$38.05	$38.39	$46.06	$43.96	$43.27	$39.94	$43.26	$39.75		$39.29
1987	$42.80	$41.03	$39.40	$47.20	$44.94	$44.11	$41.27	$44.16	$41.43		$41.64
1988	$43.21	$41.05	$40.12	$46.85	$45.31	$44.21	$41.56	$43.66	$41.83	$46.26	$41.26
1989	$43.88	$42.10	$41.33	$46.32	$45.61	$44.97	$42.50	$43.56	$43.17	$46.54	$42.68
1990	$43.36	$41.64	$41.24	$46.03	$44.81	$44.49	$42.02	$42.78	$42.73	$46.36	$41.52

Notes

1. Hinton was not included in the 1981 study.
2. Lloydminster was not included in the 1981 - 83 studies.
3. Peace River was included from 1988.

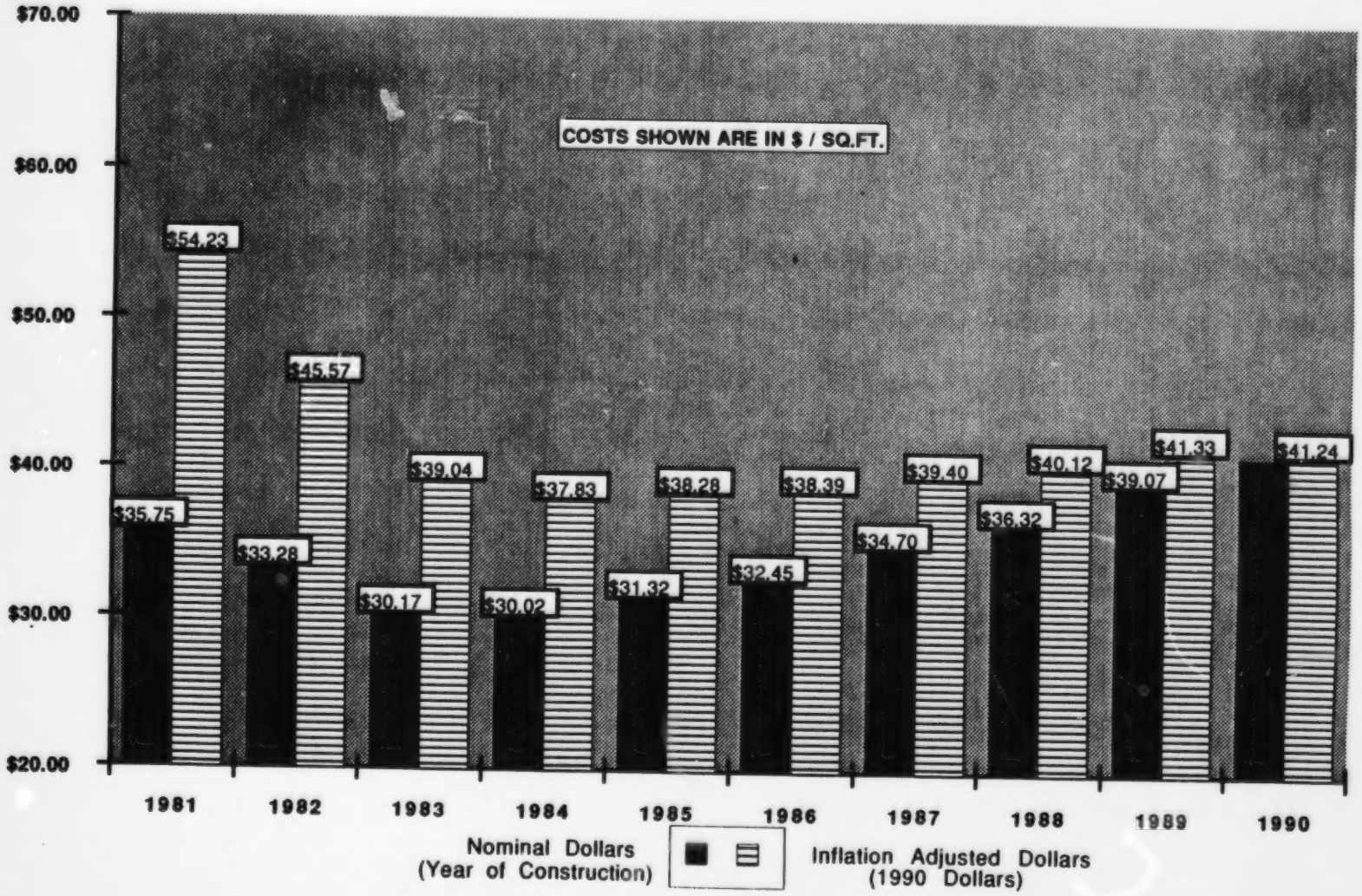
3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : CALGARY



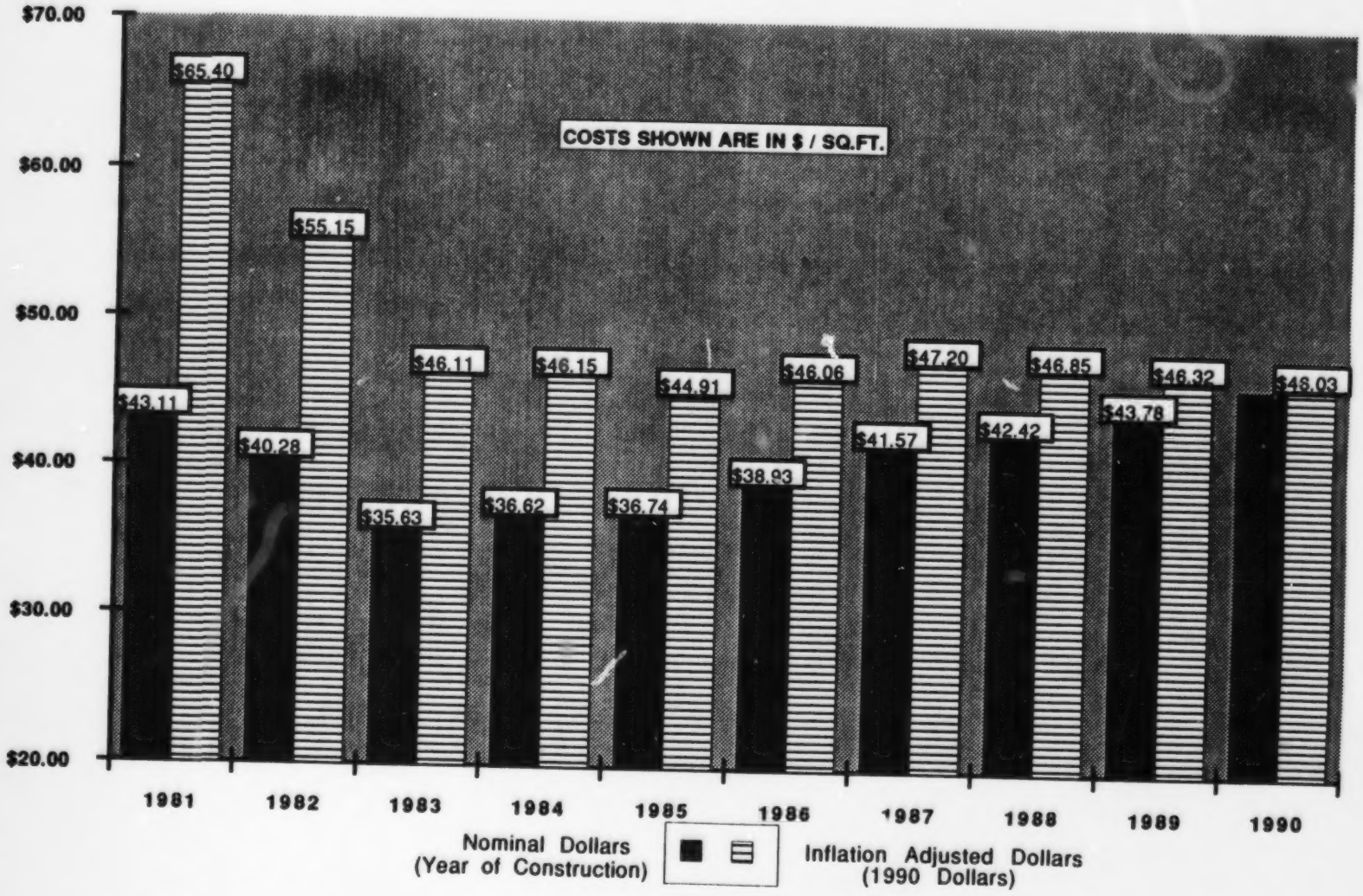
3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : EDMONTON



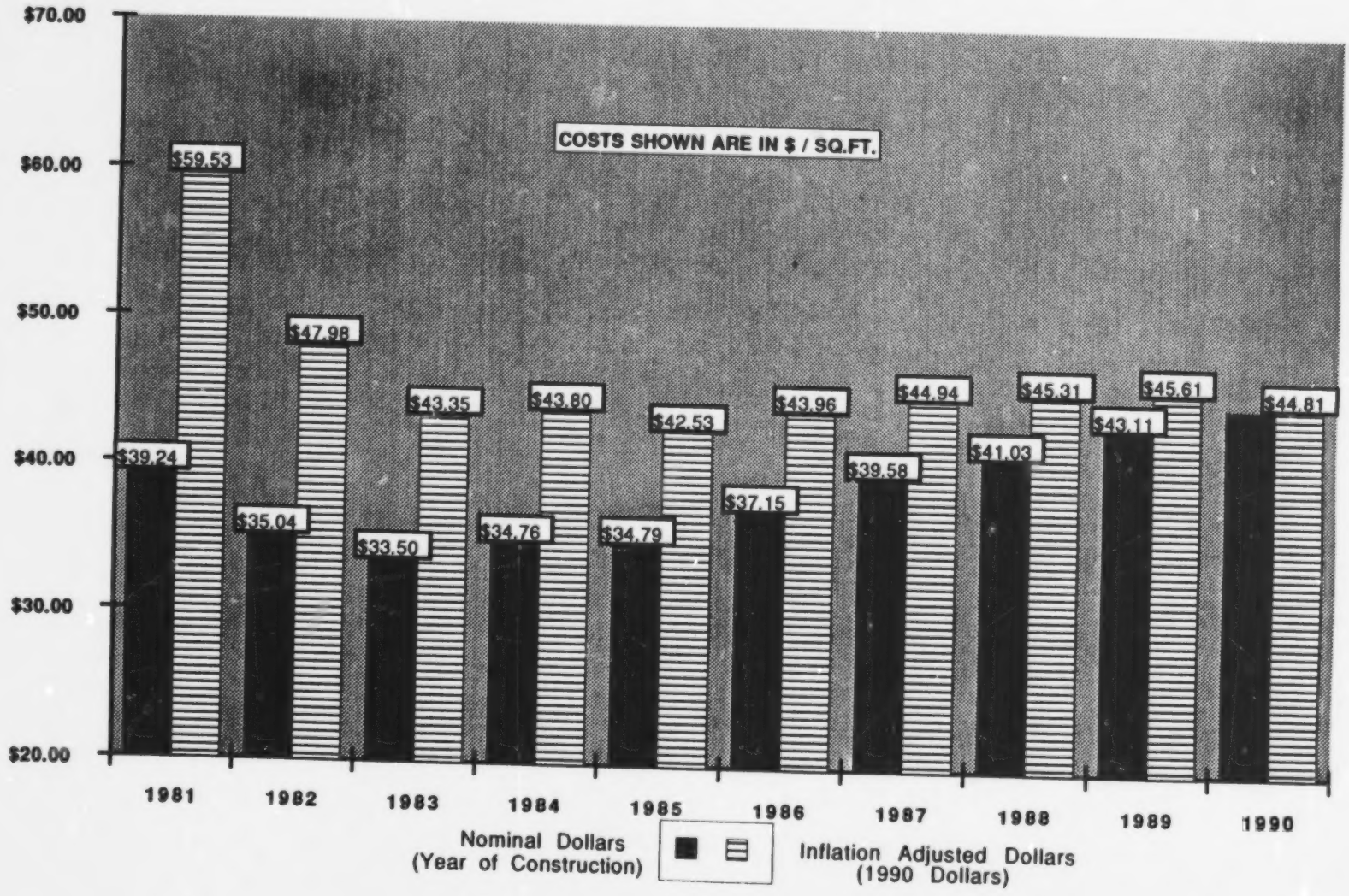
3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : FORT McMURRAY



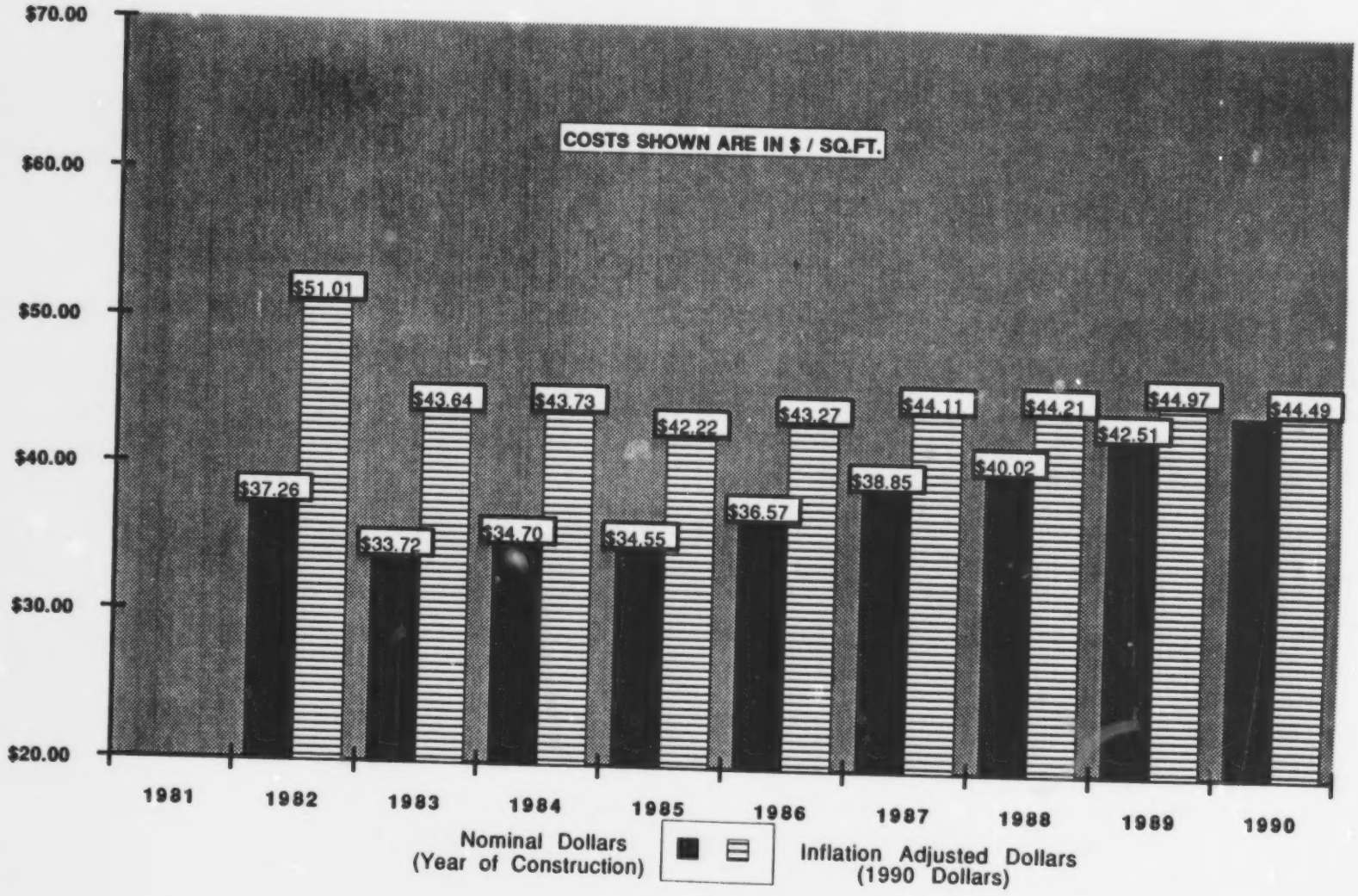
3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : GRANDE PRAIRIE



3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : HINTON



3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

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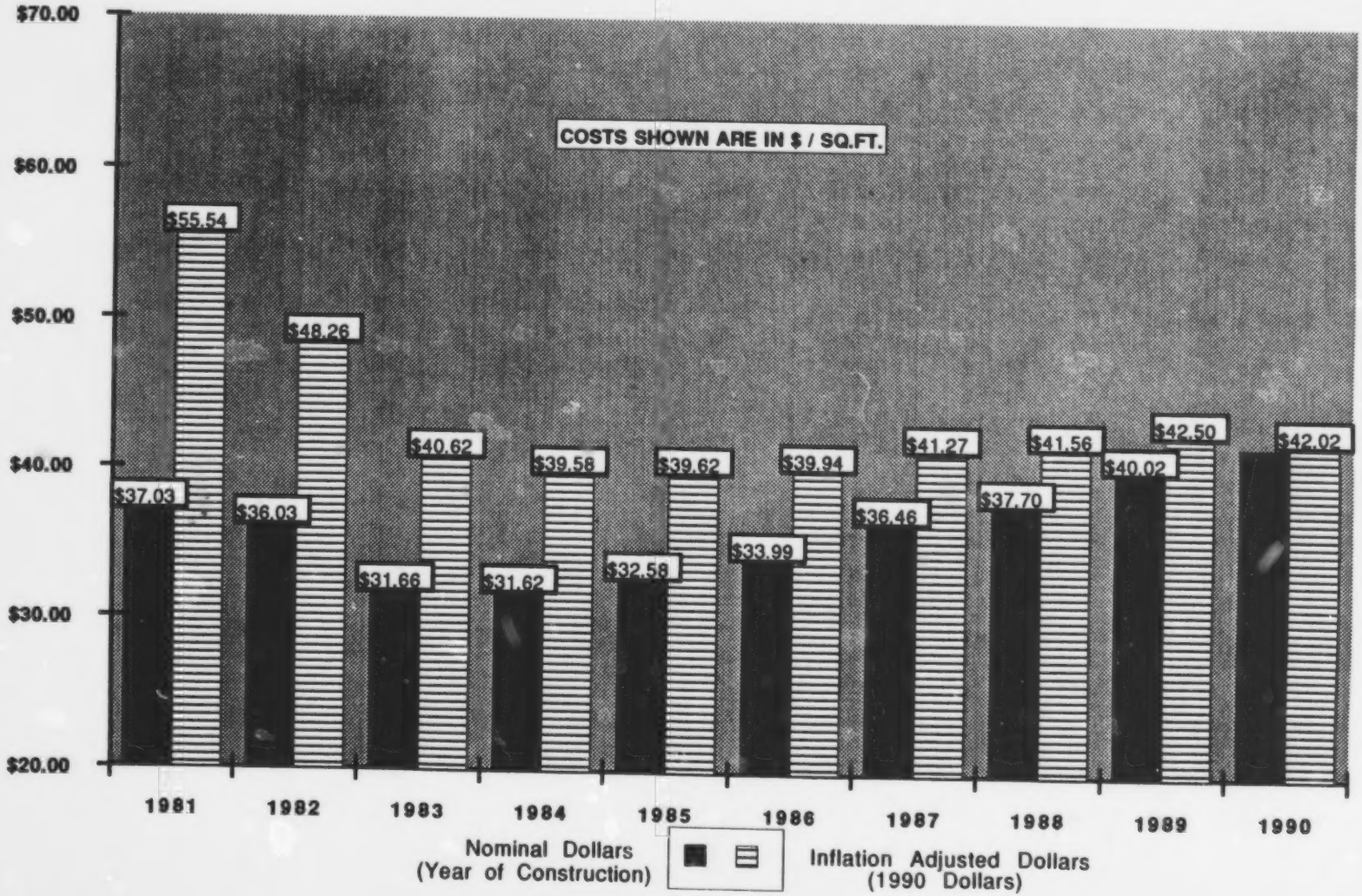
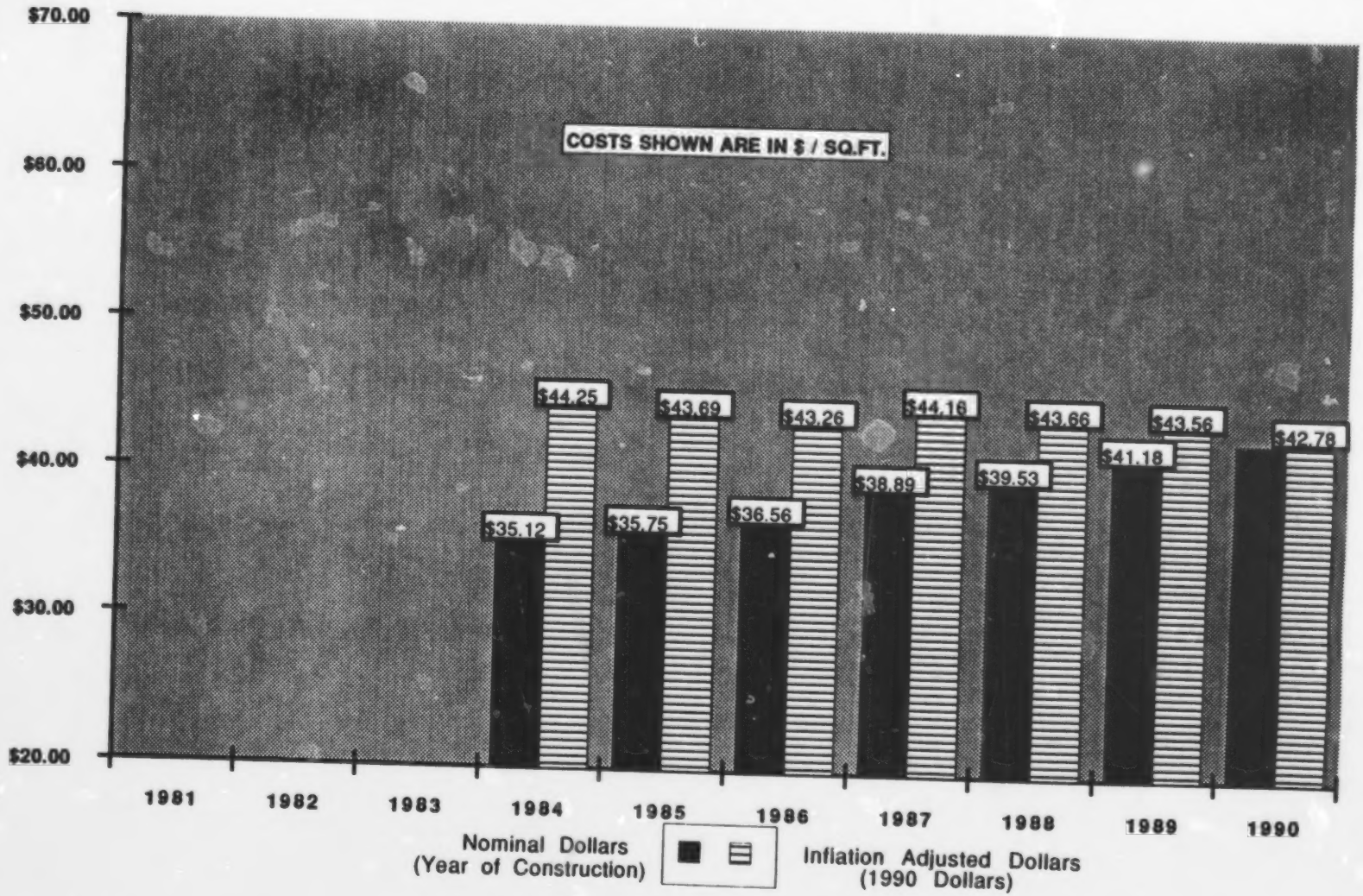


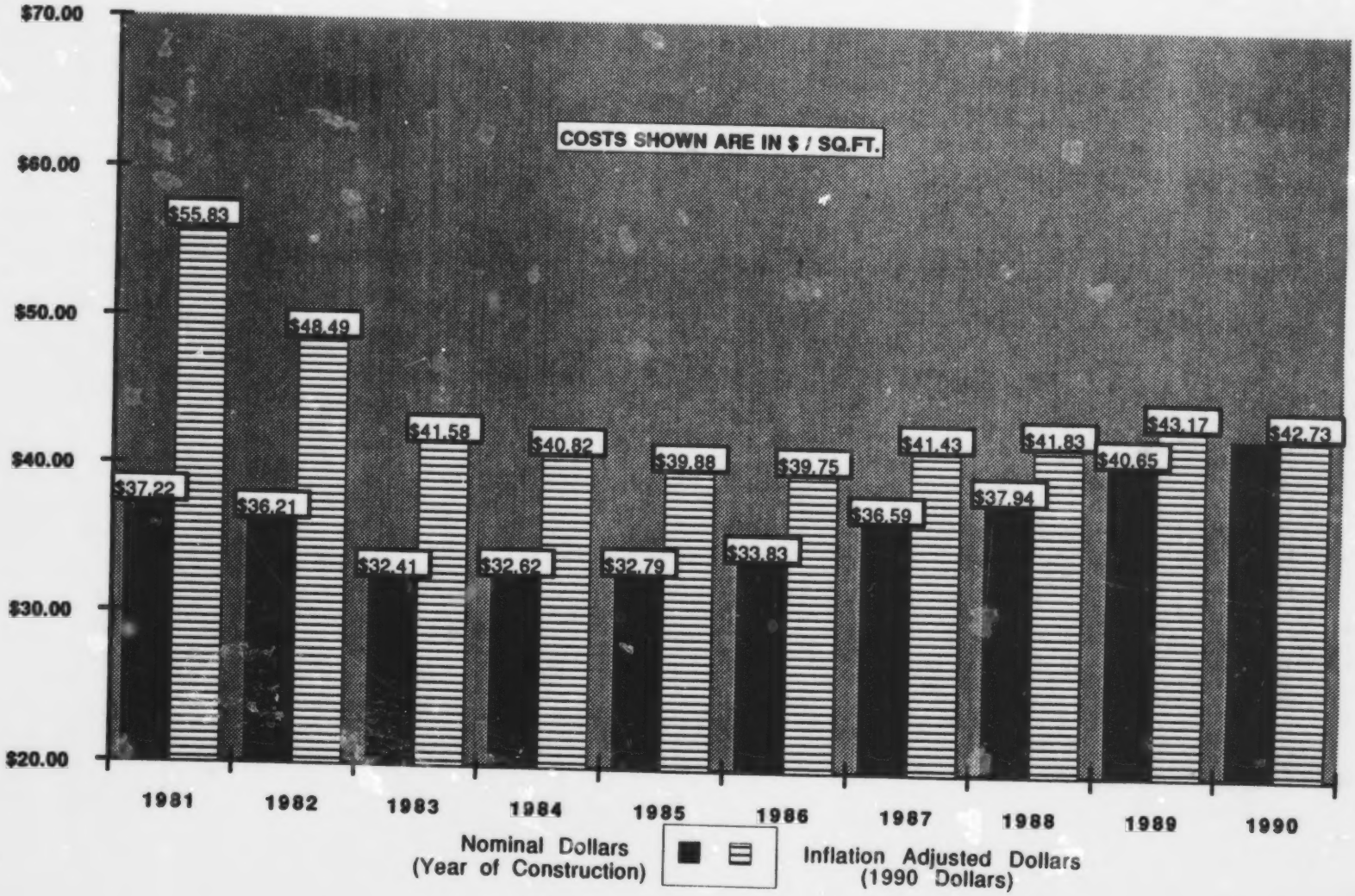
3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : LLOYDMINSTER



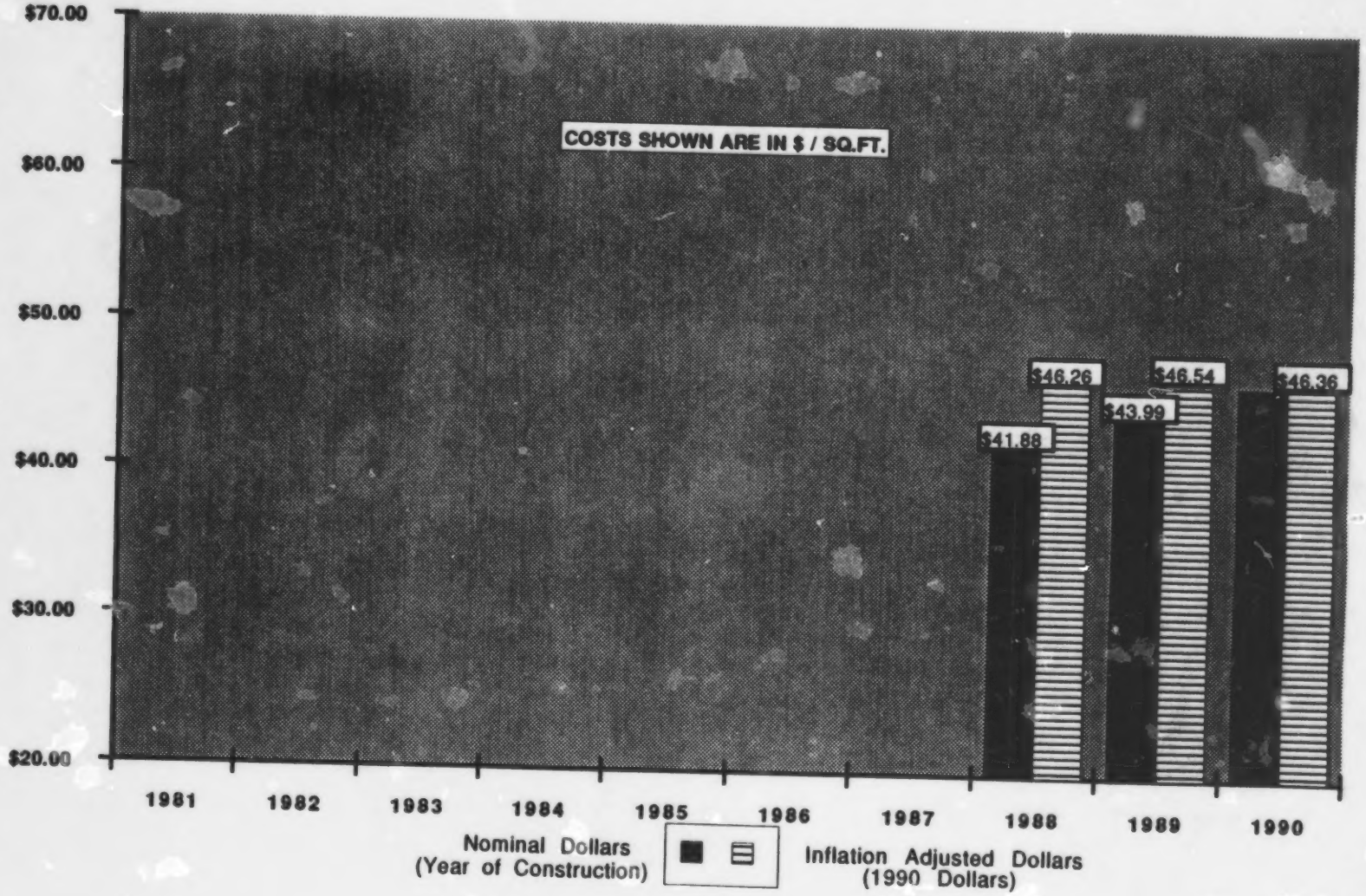
3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : MEDICINE HAT



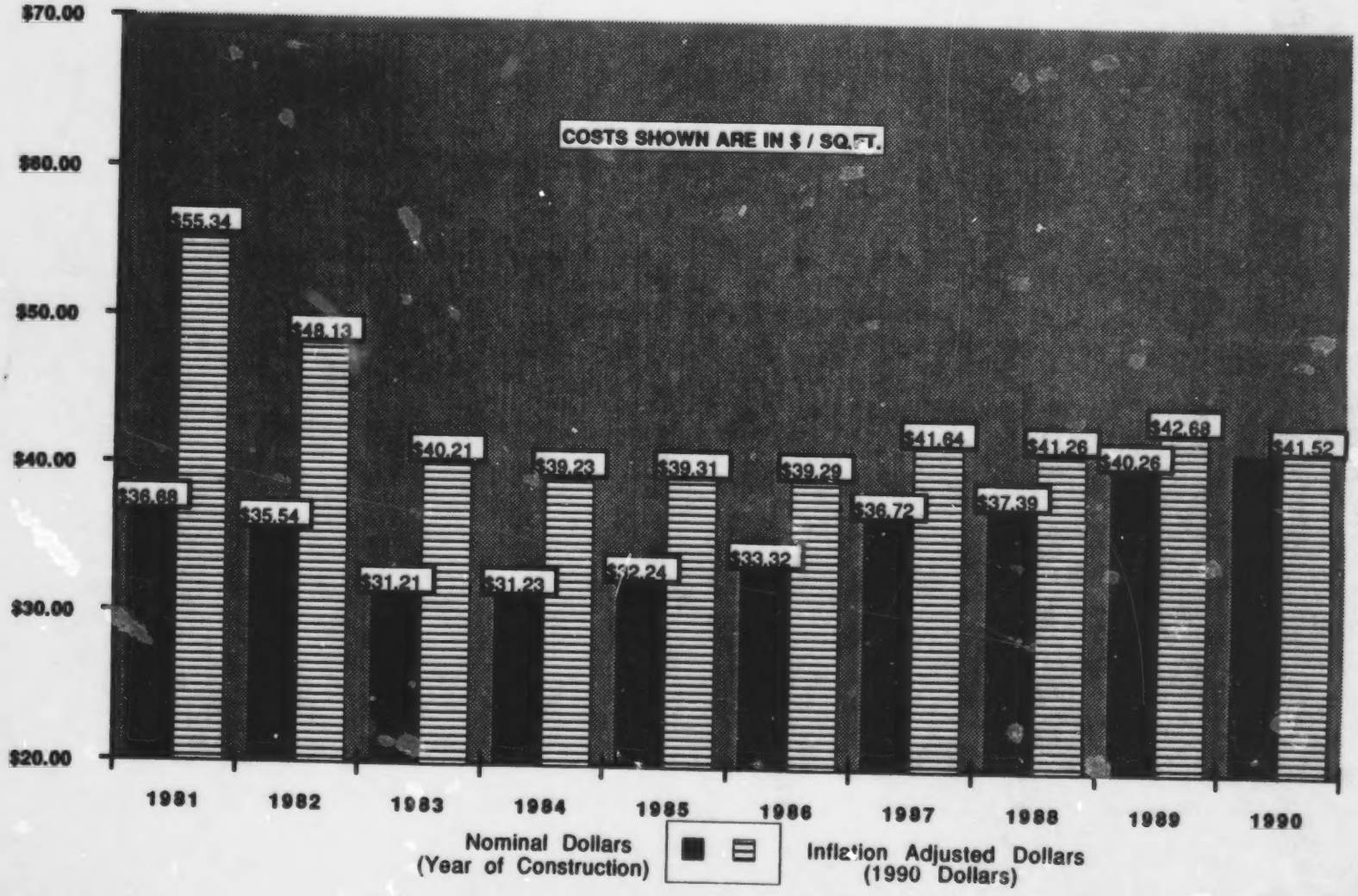
3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : PEACE RIVER



3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

CHART WA.11 : COMPARATIVE SQ. FT. COSTS 1981 - 1990 : RED DEER



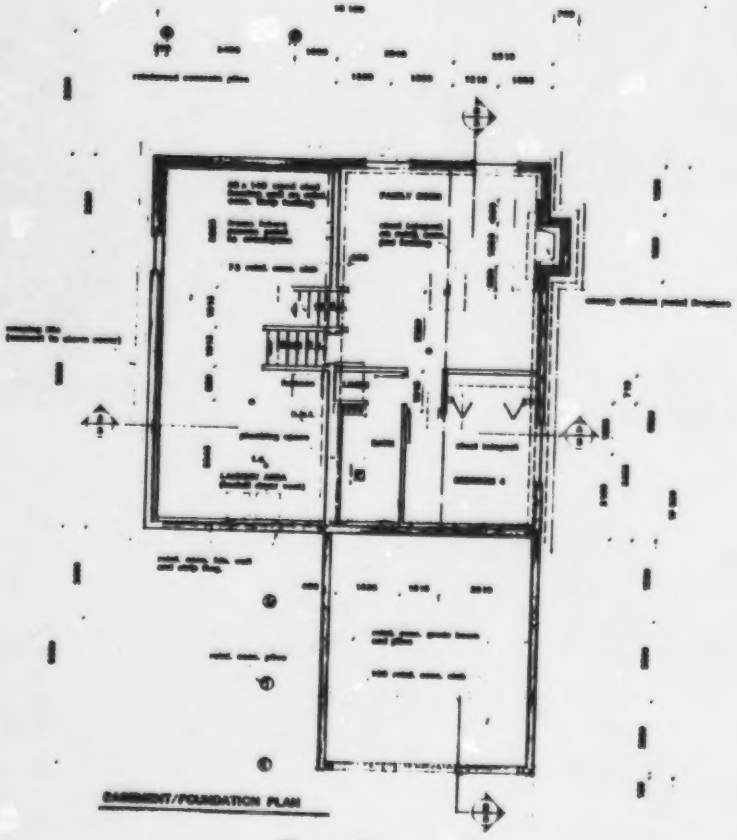
3.0 SUMMARY OF FINDINGS FOR THE 24 UNIT WALK-UP APARTMENT

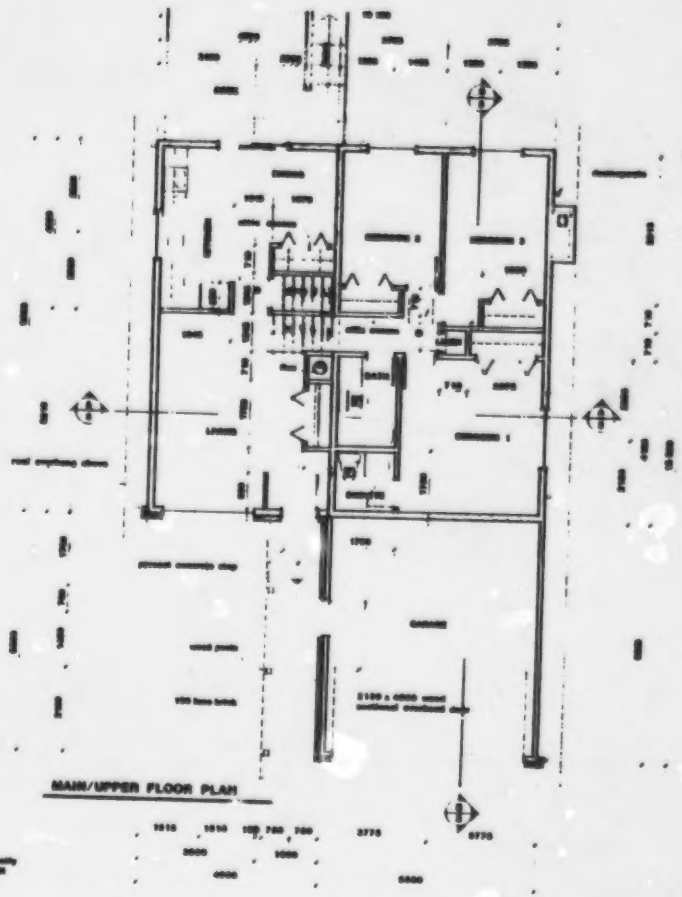
TABLE WA. 12 : TRADE DIVISION COST SUMMARIES

TRADE	CALGARY	EDMONTON	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	LLOYD-MINSTER	MEDICINE HAT	PEACE RIVER	RED DEER
1 Excavation	$5,529	$4,200	$4,772	$4,805	$3,948	$4,571	$4,101	$4,235	$4,329	$4,337
2 Concrete	$20,519	$22,028	$25,747	$25,480	$25,716	$21,951	$22,836	$22,661	$23,785	$21,663
3 Dampproofing	$802	$793	$957	$883	$897	$898	$826	$820	$970	$795
4 Siding	$16,677	$16,628	$20,572	$19,936	$18,586	$16,829	$18,185	$18,825	$20,910	$16,913
5 Roofing	$24,220	$23,823	$28,714	$26,726	$26,087	$24,457	$25,037	$25,183	$27,766	$24,487
6 Rough Carpentry	$146,873	$146,288	$167,145	$156,500	$154,132	$147,248	$144,224	$146,804	$159,461	$146,830
7 Finish Carpentry	$13,090	$12,210	$13,230	$12,226	$12,624	$12,619	$12,290	$13,079	$12,536	$12,550
8 Windows/Glazing	$27,346	$28,625	$32,001	$30,220	$30,657	$29,185	$30,041	$29,319	$31,390	$27,624
9 Sealants	$1,014	$978	$1,050	$1,005	$1,008	$983	$999	$1,010	$1,073	$995
10 Doors	$42,558	$44,110	$48,144	$47,819	$47,484	$43,239	$46,387	$44,603	$51,033	$43,987
11 Hardware	$5,035	$4,869	$5,410	$5,186	$5,101	$4,930	$5,084	$5,107	$5,443	$4,979
12 Ceramic Tiling	$6,380	$6,072	$6,780	$6,700	$6,619	$6,288	$6,376	$6,600	$7,100	$6,300
13 Wallboard	$71,111	$67,781	$76,984	$71,484	$74,346	$70,176	$72,913	$72,634	$75,418	$69,769
14 Flooring	$48,707	$48,926	$55,870	$53,536	$52,932	$50,371	$51,285	$52,661	$56,641	$48,875
15 Painting	$23,041	$23,380	$25,881	$25,090	$25,912	$23,588	$24,450	$23,948	$25,895	$22,509
16 Fittings	$51,110	$50,490	$57,422	$53,270	$53,769	$55,335	$52,628	$54,052	$55,496	$51,005
17 Specialties	$19,746	$19,748	$21,508	$21,213	$21,264	$19,851	$20,468	$20,337	$21,924	$19,647
18 Appliances	$35,810	$35,772	$40,040	$38,880	$38,950	$36,393	$37,460	$36,942	$38,880	$35,696
19 Plumbing	$73,200	$71,460	$80,040	$79,728	$77,880	$75,240	$74,280	$75,384	$81,240	$71,880
20 Heating	$37,800	$36,562	$44,640	$42,360	$39,816	$37,728	$43,200	$38,064	$44,400	$38,160
21 Ventilation	$9,630	$9,028	$10,108	$10,224	$9,816	$9,696	$9,456	$9,744	$10,680	$9,120
22 Fire Protection	$2,670	$2,610	$3,048	$2,976	$2,856	$2,640	$2,760	$2,736	$3,096	$2,688
23 Electrical	$48,360	$47,160	$52,296	$54,840	$50,688	$47,880	$51,240	$50,880	$60,640	$49,920
24 Site Overhead	$54,000	$54,000	$54,000	$54,000	$54,000	$54,000	$54,000	$54,000	$54,000	$54,000
Sub-Total	$785,228	$777,541	$876,359	$845,086	$835,088	$796,096	$810,526	$809,628	$874,106	$784,729
25 Gen. Contractor's Overhead & Profit	$47,100	$46,700	$43,800	$50,700	$54,300	$43,800	$44,600	$44,500	$52,500	$45,100
TOTAL	$832,328	$824,241	$920,159	$895,786	$889,388	$839,896	$855,126	$854,128	$926,606	$829,829

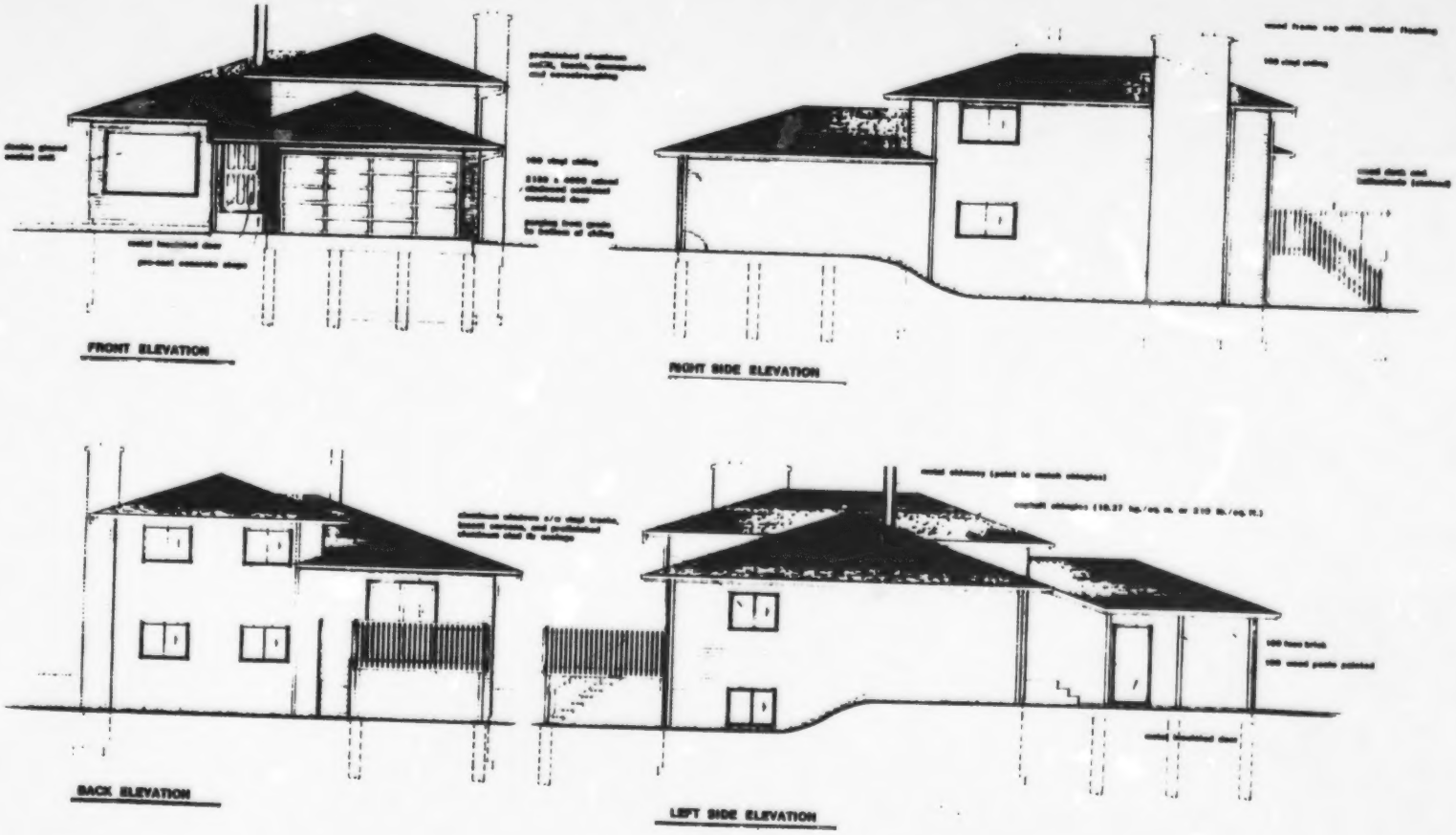
APPENDIX A

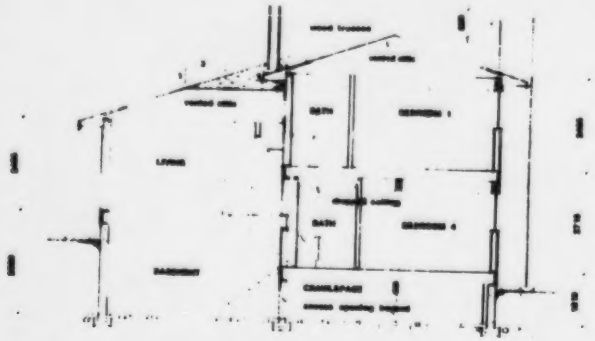
REDUCED DRAWINGS - SINGLE DETACHED HOUSE



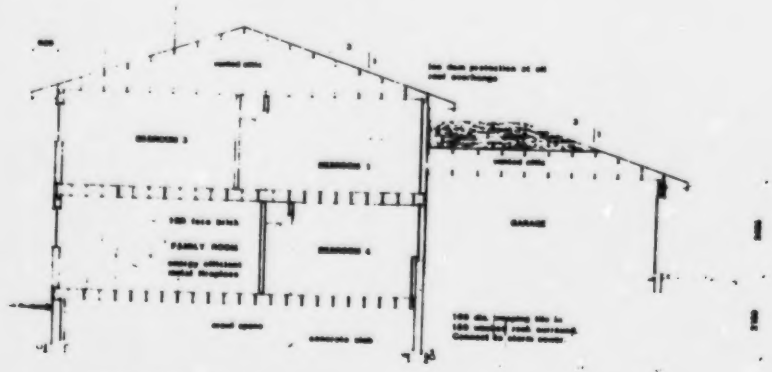


1 OF 3


FRONT ELEVATION
RIGHT SIDE ELEVATION
BACK ELEVATION
LEFT SIDE ELEVATION



A-A BUILDING CROSS SECTION



B-B BUILDING CROSS SECTION

SPECIFICATIONS

FOUNDATIONS

FRAMING

INSULATION/VAPOUR BARRIER/DRYWALL

EXTERIOR FINISHES

DOORS AND WINDOWS

INTERIOR FINISHES

FITTINGS

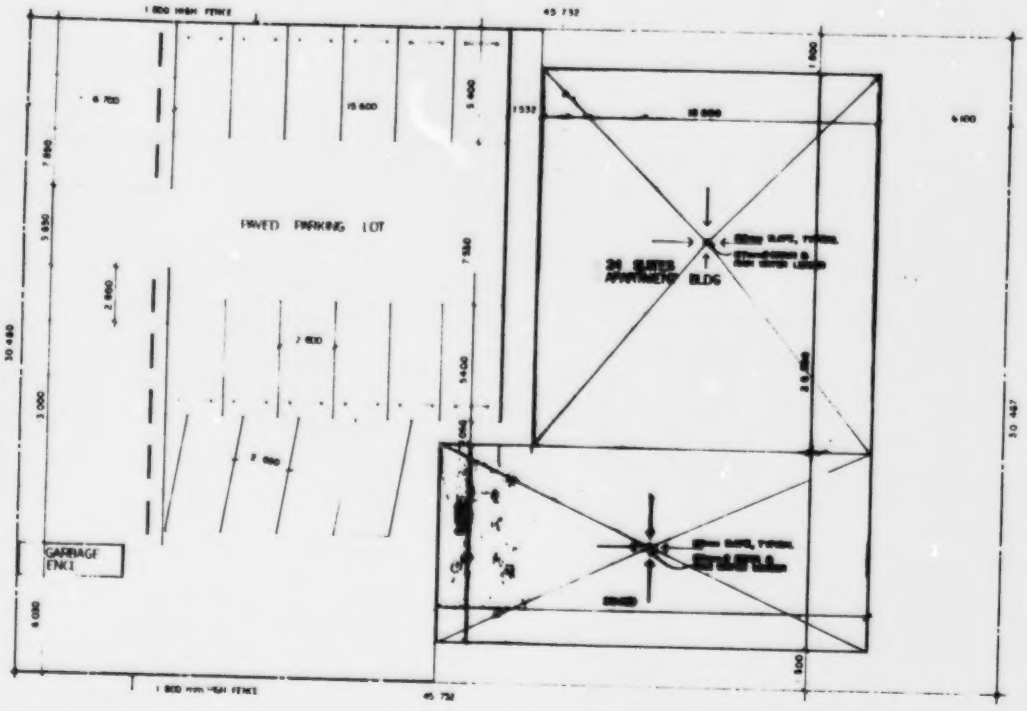
SPECIALTIES

PLUMBING AND HEATING

ELECTRICAL

APPENDIX B

REDUCED DRAWINGS - 24 UNIT WALK-UP APARTMENT



STATISTICS

SITE AREA

SUITES

BUILDING

AREA

PARKING

THE BUILDING IS REQUIRED TO FACE AT LEAST ONE STREET

ACCESS WALL PANELS OR WINDOW WALL IN PROVIDED ON SECOND AND THIRD FLOOR IN AT LEAST 1 WALL FACING ON A STREET

SPACING SEPARATIONS BETWEEN BUILDINGS

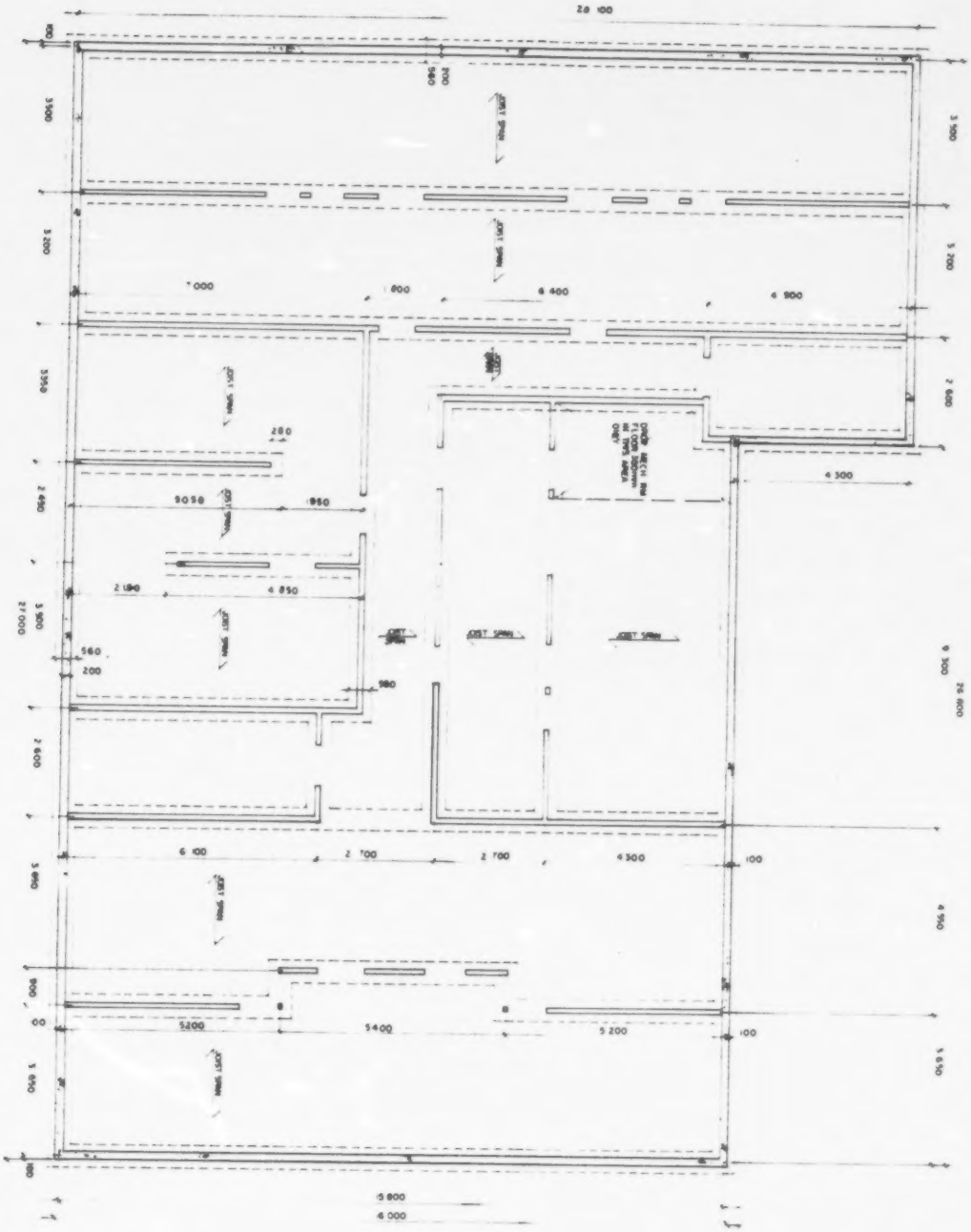
THE MAXIMUM PERCENTAGE OF UNPROTECTED OPENINGS IN AN EXPOSED BUILDING FACE SHALL CONFORM TO THE REQUIREMENTS GIVEN FOR IN THE ALBERTA BUILDING CODE

ONE SET IF STANDARD DRAWINGS ARE AVAILABLE (UNIVERSITY OF THE TOP TWO ITEMS FOR TWELVE WEEKS, WHICH FOR THE FIRST ITEM IS THE UNIVERSITY CAMPUS, ROOF FOR THE

ALBERTA HOUSE COST COMPARISON STUDY

SITE PLAN

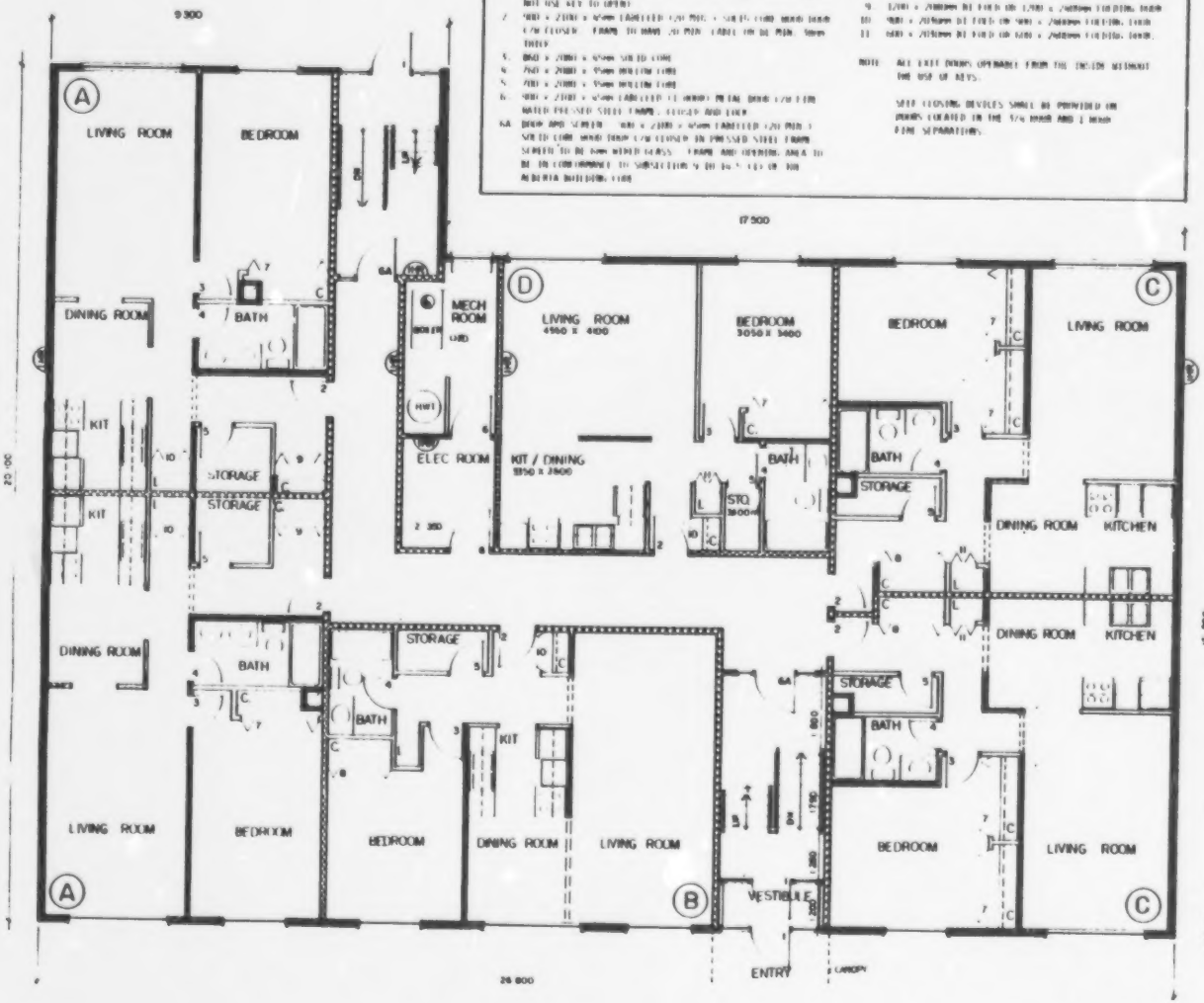
SCALE 1:100



ALBERTA HOUSE COST COMPARISON STUDY

FOUNDATION PLAN

SCALE 1:50



DOOR SCHEDULE

1 *810 x 2100mm ALUMINUM GLAZED DOOR C/W DOOR CLOSER, DEAD BOLT, LOCK AND DOOR VIEWER (NOTE: DOOR INSIDE SHOULD NOT USE KEY TO OPEN)
2 *810 x 2100 x 45mm TABLETOP (20 MIN.) SOLID CORE WOOD DOOR C/W CLOSER FRAME TO HAVE 20 MIN. LABEL OR BE MIN. 45mm THICK
3. 860 x 2100 x 45mm SOLID CORE
4. 760 x 2100 x 45mm HOLLOW CORE
5. 710 x 2100 x 45mm HOLLOW CORE
6. *810 x 2100 x 45mm TABLETOP (1 HOUR) METAL DOOR C/W FIRE RATED PRESSED STEEL FRAME, CLOSER AND LOCK
6A DOOR AND SCREEN 810 x 2100 x 45mm TABLETOP (20 MIN.) SOLID CORE WOOD DOOR C/W CLOSER IN PRESSED STEEL FRAME SCREEN TO BE 45mm WOOD FRAME AND SCREEN AREA TO BE IN CONFORMANCE TO SUBSECTION 9.10.15.5.(2) OF THE ALBERTA BUILDING CODE
7 1980 x 2100mm BI FOLD OR DOOR x 2100mm FOLDING DOOR
8 1540 x 2100mm BI FOLD OR DOOR x 2100mm FOLDING DOOR
9 1760 x 2100mm BI FOLD OR DOOR x 2100mm FOLDING DOOR
10 *810 x 2100mm BI FOLD OR 610 x 2100mm FOLDING DOOR
11 460 x 2100mm BI FOLD OR 460 x 2100mm FOLDING DOOR.

NOTE: ALL EXIT DOORS OPERABLE FROM THE INSIDE WITHOUT THE USE OF KEYS.

SELF CLOSING DEVICES SHALL BE PROVIDED ON DOORS LOCATED IN THE 5/8 WALL AND 1 HOUR FIRE SEPARATIONS.

WALL LEGEND

EXTERIOR STUD WALL C/W 5/8 x 3mm SHEATHING TO FOUNDATION WALL - SIDING OR STUCCO, BUILDING PAPER, 38 x 140mm STUDS @ 400mm O.C., R/SI 3.5 MINERAL WOOL INSULATION, VAPOUR BARRIER, 12.7mm GYPSUM BOARD.

EXTERIOR STUD WALL - 1 HOUR FIRE RESISTANCE RATING, C/W 5/8 x 3mm SHEATHING TO FOUNDATION WALL - NON COMBUSTIBLE SIDING OR STUCCO, BUILDING PAPER, 38 x 140mm STUDS @ 400mm O.C., R/SI 3.5 MINERAL WOOL INSULATION WITH DENSITY OF 1.2kg/m³, VAPOUR BARRIER, 15.9mm TYPE X GYPSUM BOARD.

EXTERIOR STUD WALL - SIDING OR STUCCO, BUILDING PAPER, 38 x 89mm STUDS @ 400mm O.C., R/SI 2.1 MINERAL WOOL INSULATION, VAPOUR BARRIER, 12.7mm GYPSUM BOARD.

EXTERIOR STUD WALL - 1 HOUR FIRE RESISTANCE RATING, NON COMBUSTIBLE SIDING OR STUCCO, BUILDING PAPER, 38 x 89mm STUDS @ 400mm O.C., R/SI 2.1 MINERAL WOOL INSULATION WITH DENSITY OF 1.2kg/m³, VAPOUR BARRIER, 15.9mm TYPE X GYPSUM BOARD.

INTERIOR WALL - 5/8 HOUR FIRE SEPARATION 2 ROWS OF 38 x 89mm STUDS, EACH SET @ 400mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE WITH A MASS OF AT LEAST 1.2kg/m² OR EACH SIDE, 12.7mm GYPSUM BOARD, BOTH SIDES.

INTERIOR WALL - 12.7mm GYPSUM BOARD BOTH SIDES OF 38 x 140mm STUDS.

INTERIOR WALL - 1 HOUR FIRE RESISTANCE RATING, 38 x 89mm STUDS @ 400mm O.C. CROSS FURR - 38 x 140mm STUDS AND 12.7mm TYPE X GYPSUM BOARD, BOTH SIDES.

INTERIOR WALL - 1 HOUR FIRE SEPARATION 2 ROWS OF 38 x 89mm STUDS, EACH SET @400mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE TO EACH SIDE, 15.9mm TYPE X GYPSUM BOARD, BOTH SIDES.

INTERIOR WALL - 1 HOUR FIRE SEPARATION 38 x 140mm STUDS @ 400mm O.C. AND 15.9mm TYPE X GYPSUM BOARD BOTH SIDES.

INTERIOR WALL - 38 x 89mm STUDS AT 400mm O.C. AND 12.7mm GYPSUM BOARD, BOTH SIDES

[illegible]

NOTES

DOUBLE STUDS UNDER ALL BEARING POINTS AND AT OPENINGS.
LINTELS - 2 - 38 x 235mm BUILT UP LINTEL, WITH 2 VERTICAL ABOVE AT OPENINGS.
BALCONY CANTILEVERED JOISTS SHALL EXTEND INTO BUILDING MINIMUM 2.4mm.

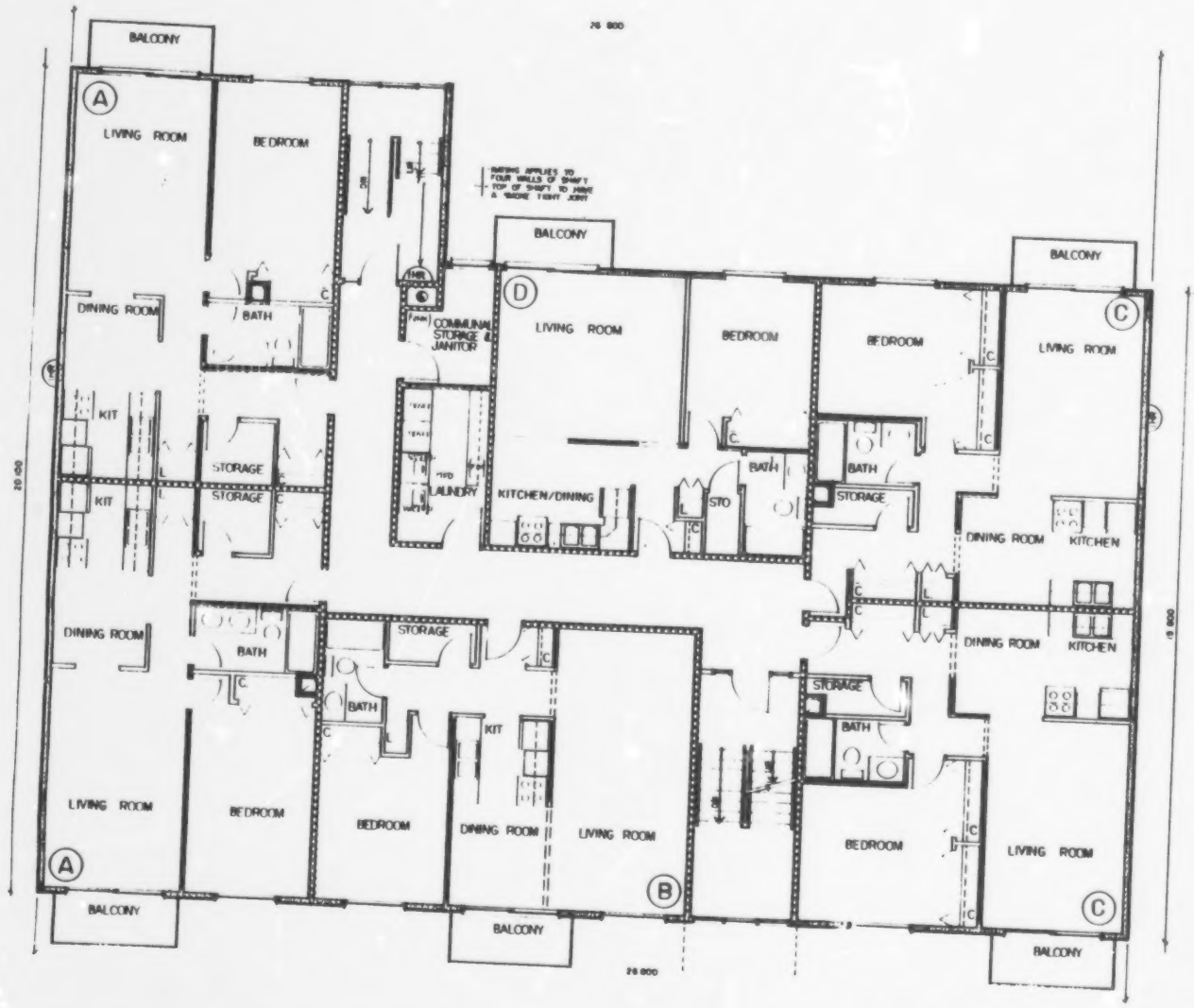
JOIST FIRESTOPPING - 5/8 FIRE RESISTANT RATING AND SIZE OF W.P. 15.9mm TYPE X GYPSUM BOARD, 5.2mm x 1.5mm THICK GALVANIZED STEEL J STUDS AT 400mm O.C. AND T TRACKS TOP AND BOTTOM, RESILIENT CHANNEL - CHANNELS @ 400mm O.C., MINERAL WOOL INSULATION WITH DENSITY OF 1.2kg/m³, 15mm GYPSUM CORE BOARD.

ALBERTA HOUSE COST COMPARISON STUDY

BASEMENT FLOOR PLAN

SCALE 1:50

0 .5 1 2 3 4 5 6m

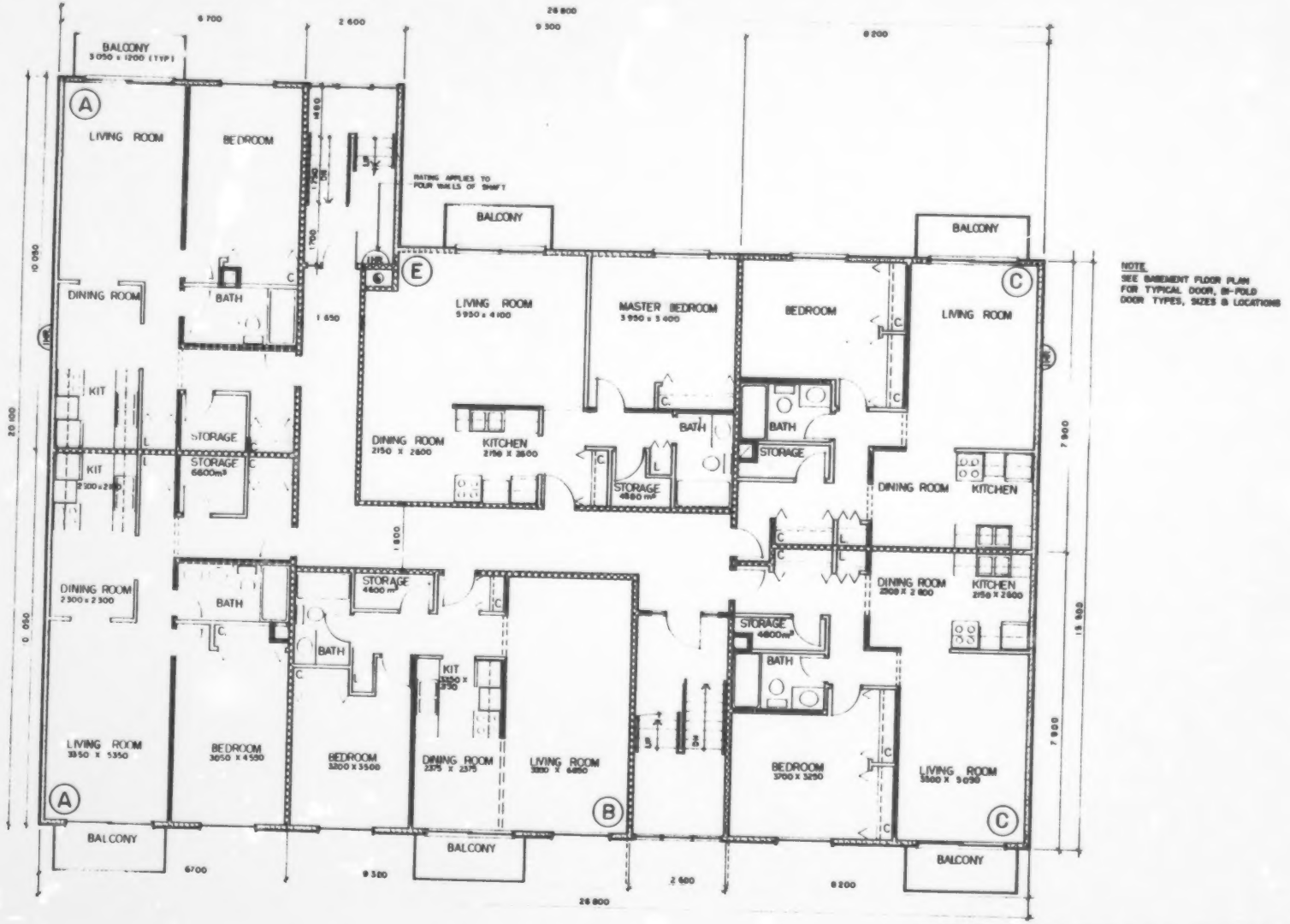


NOTE
SEE BASEMENT FLOOR PLAN FOR TYPICAL DOOR & BI FOLD DOOR TYPES, SIZES & LOCATIONS

ALBERTA HOUSE COST COMPARISON STUDY

MAIN FLOOR PLAN

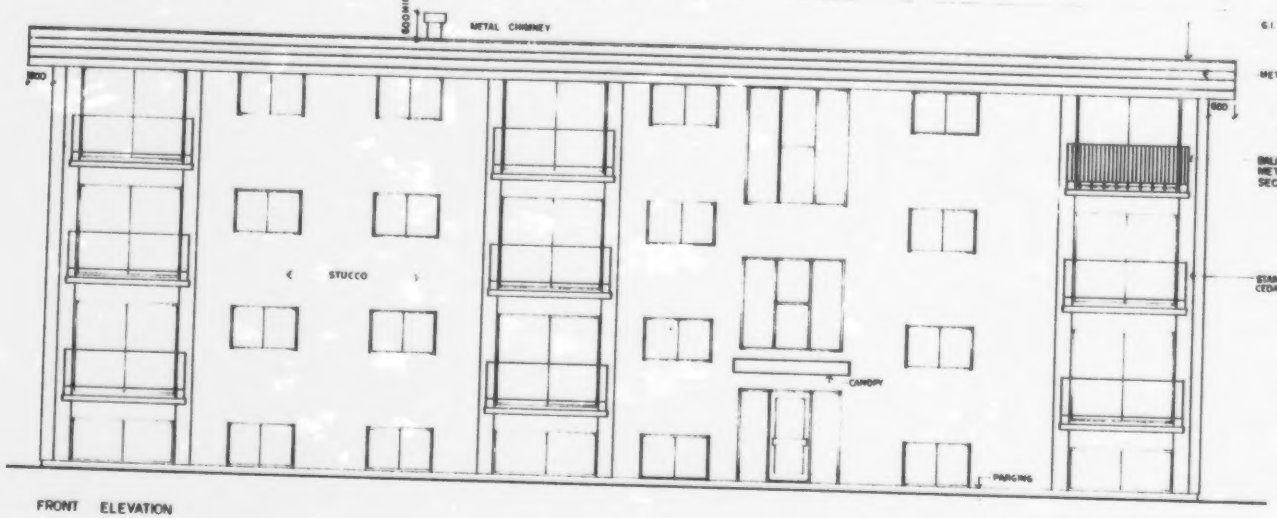
SCALE 1:50



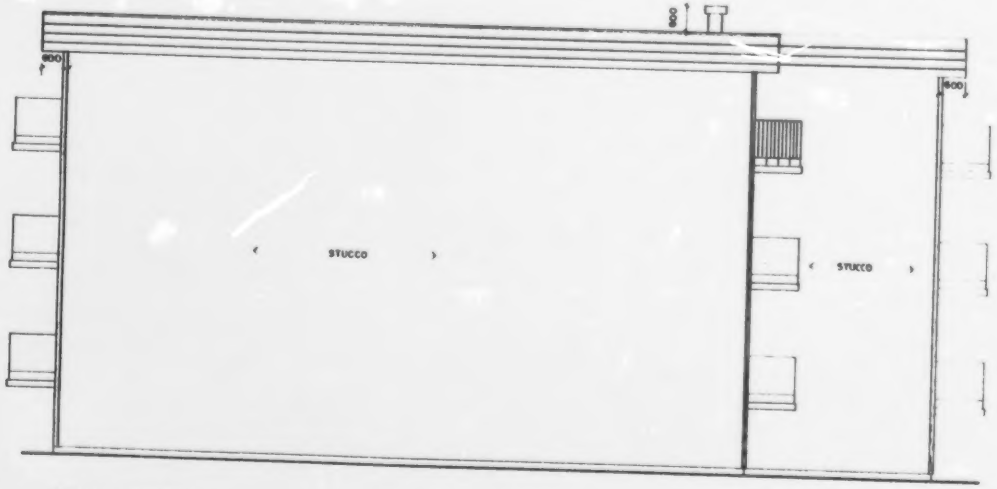
ALBERTA HOUSE COST COMPARISON STUDY

2ND & 3RD FLOOR PLAN

SCALE 1:50


600MIN
METAL CHIMNEY
G.I. FLASHING PAINTED TO MATCH FASCIA
METAL FASCIA PAINTED WHITE
800
800
BALCONY GUARD - 1070mm HIGH; 970mm HIGH METAL PICKETS AT 100mm O.C.; RAILING SECURED TO BALCONY DECK AT 1200mm O.C. MAX.
STAINED DARK BROWN CEDAR COLUMN
STUCCO
CANOPY
PARGING

FRONT ELEVATION

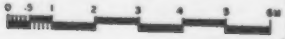


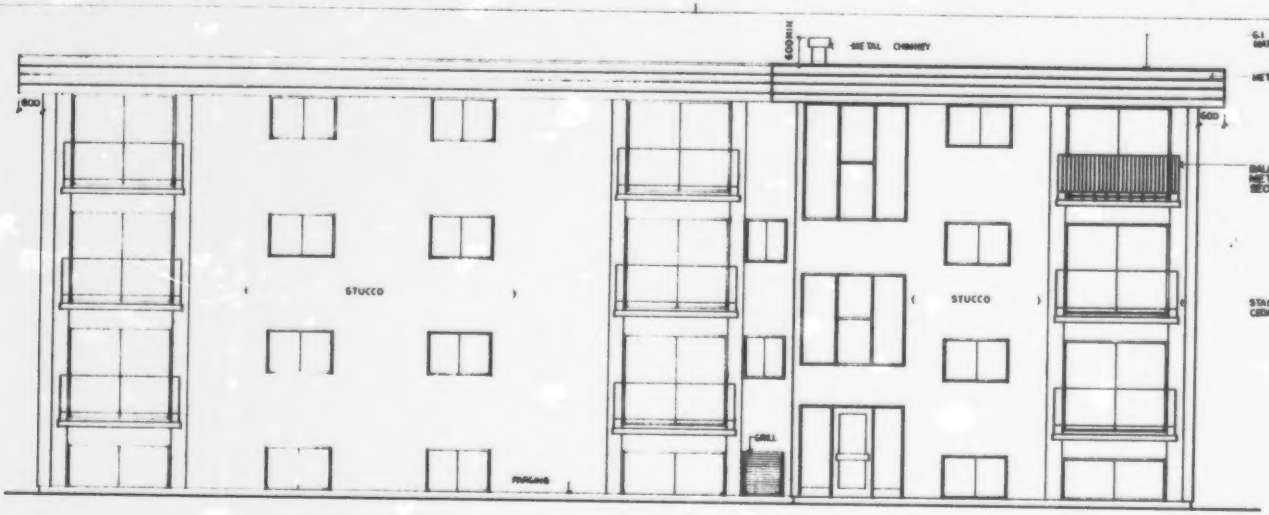
RIGHT ELEVATION

ALBERTA HOUSE COST COMPARISON STUDY

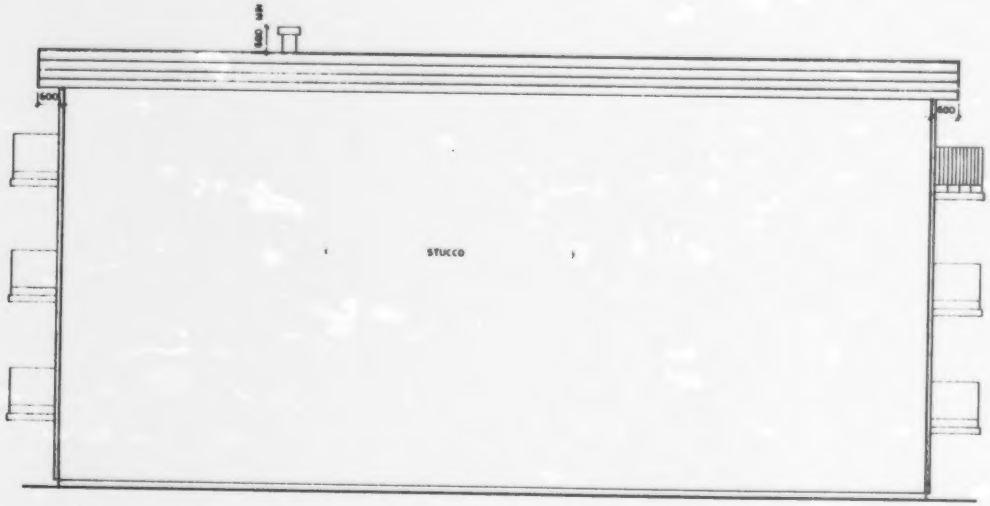
ELEVATIONS

SCALE 1:50





REAR ELEVATION



LEFT ELEVATION

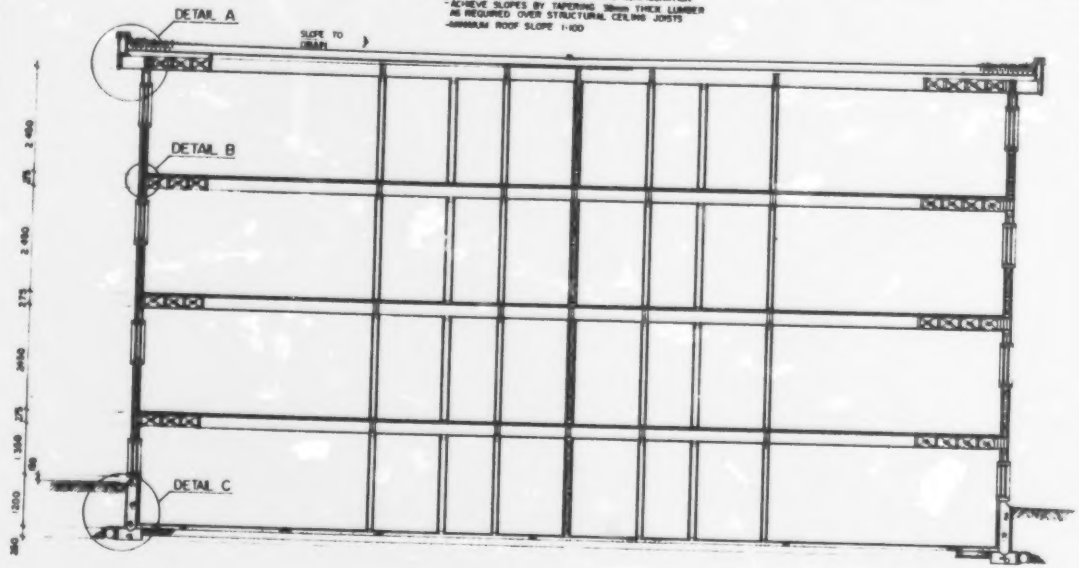
DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER OR ARCHITECT REGISTERED IN THE PROVINCE OF ALBERTA.

ALBERTA HOUSE COST COMPARISON STUDY

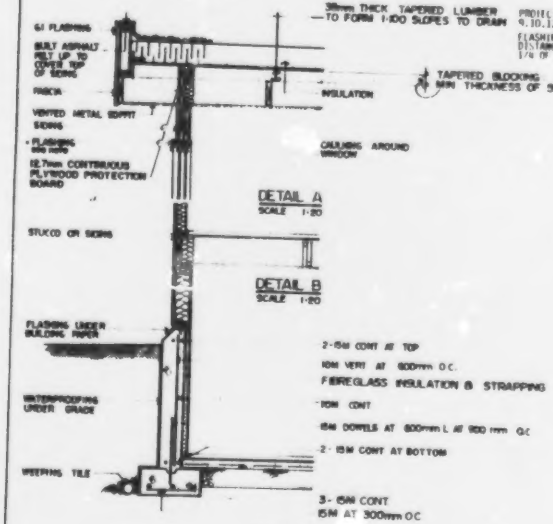
ELEVATIONS

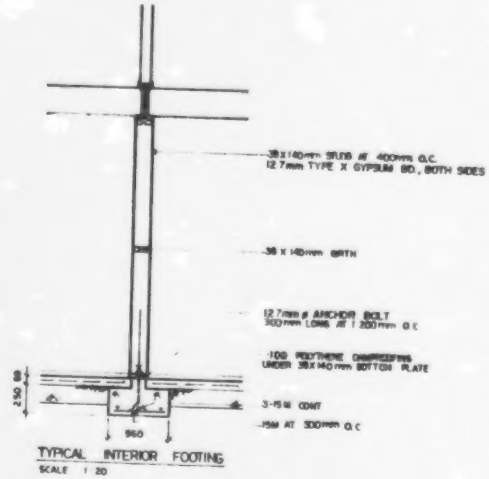
SCALE 1:50

0 .5 1 2 3 4 5 6m



SECTION
SCALE 1:50


38mm THICK TAPERED LUMBER —TO FORM 1:100 SLOPES TO DRAIN
PROJECTION OF SOFFITS SHALL BE PROVIDED AS STATED IN ARTICLES 9.10.12.6. OR 9.10.12.7.
FLASHING SHALL BE APPLIED OVER ALL EXTERIOR OPENINGS WHERE THE VERTICAL DISTANCE FROM THE BOTTOM OF THE EAVE TO THE TOP OF THE TRIM IS MORE THAN 1/6 OF THE HORIZONTAL OVERHANG OF THE EAVE.
G.I. FLASHING
BUILT ASPHALT FELT UP TO COVER TOP OF SIDING
FASCIA
VENTED METAL SOFFIT
SIDING
FLASHING AS REQ'D
12.7mm CONTINUOUS PLYWOOD PROTECTION BOARD
STUCCO OR SIDING
TAPERED BLOCKING MIN THICKNESS OF 50mm
INSULATION
CAULKING AROUND WINDOW
DETAIL A
SCALE 1:20
DETAIL B
SCALE 1:20
FLASHING UNDER BUILDING PAPER
WATERPROOFING UNDER GRADE
WEEPING TILE
2-15M CONT AT TOP
10M VERT AT 600mm O.C.
FIBREGLASS INSULATION & STRAPPING
15M CONT
15M DOWELS AT 600mm L AT 900 mm O.C
2-15M CONT AT BOTTOM
3-15M CONT
15M AT 300mm O.C
DETAIL C
SCALE 1:20


38x140mm STUD AT 400mm O.C.
12.7mm TYPE X GYPSUM BD., BOTH SIDES
38 X 140mm GIRTH
12.7mm ø ANCHOR BOLT 300mm LONG AT 1 200mm O.C
100 POLYTHENE DAMPPROOFING UNDER 38X140mm BOTTOM PLATE
3-15M CONT
15M AT 300mm O.C
250
960

TYPICAL INTERIOR FOOTING
SCALE 1:20

ROOF CONSTRUCTION 1 HOUR FIRE RESISTANCE RATING

- ROOFING GRAVEL
- BUILT-UP ROOFING
- RSI 6 RIGID FIBREGLASS INSULATION AND VAPOUR BARRIER
- 19mm PLYWOOD SHEATHING ALL EDGES SUPPORTED WITH MIN. 38 x 38mm WOOD BLOCKING
- 38 x 235mm @ 400mm O.C. I SERIES JOISTS AT 600mm O.C.
- 38 x 184mm TRUSS BRIDGING

15.9mm TYPE X GYPSUM BOARD

EXTERIOR WALL CONSTRUCTION

TYPE A 45 MIN FIRE RESISTANCE RATING

- SIDING OR STUCCO
- BUILDING PAPER
- RSI 2.1 MINERAL WOOL INSULATION AND VAPOUR BARRIER
- 38 x 89mm WOOD STUDS @ 400mm O.C. (38 x 140mm WOOD STUDS @ 400mm O.C. FOR BASEMENT)
- 12.7mm GYPSUM BOARD

TYPE B 1 HOUR FIRE RESISTANCE RATING

SAME AS TYPE A EXCEPT MINERAL WOOL INSULATION TO HAVE DENSITY OF 1.2 kg/m³, 15.9mm TYPE X GYPSUM BOARD AND STUCCO OR EQUIVALENT SIDING.

FLOOR CONSTRUCTION

1 x 1 HOUR FIRE SEPARATION AND S.T.C. RATING OF 5
FLOOR FINISH
19mm PLYWOOD SHEATHING
19mm T & G SPRUCE OR 15.9mm PLYWOOD SUBFLOOR WITH SUITABLE FIRE RETARDANT TREATMENT
38mm x 235mm @ 400mm O.C. I SERIES JOISTS
38 x 184mm TRUSS @ 600mm O.C. BRIDGING AT 2.4m O.C. MAX.
RESILIENT CHANNELS
15.9mm TYPE X GYPSUM BOARD TYPICALLY EXCEPT FOR MECHANICAL ROOM WHERE APPLY 2 LAYERS OF 15.9mm TYPE X GYPSUM BOARD

CORRIDOR AND DEMISING WALL CONSTRUCTION

1/2 HOUR FIRE SEPARATION AND S.T.C. RATING OF 45
TWO ROWS 38 x 89mm STUDS, EACH SET 300mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE WITH A MASS OF AT LEAST 1.2kg/m² IN EACH SIDE
12.7mm GYPSUM BOARD, BOTH SIDES.

BEARING WALL CONSTRUCTION

1/2 HOUR FIRE RESISTANCE RATING.
38 x 140mm @ 38 x 89mm WOOD STUDS @ 400mm O.C.
12.7mm TYPE X GYPSUM WALLBOARD, BOTH SIDES

NOTE
ALTERNATE INSULATION RSI 6 FIBREGLASS BATT INSULATION SET IN JOIST SPACE

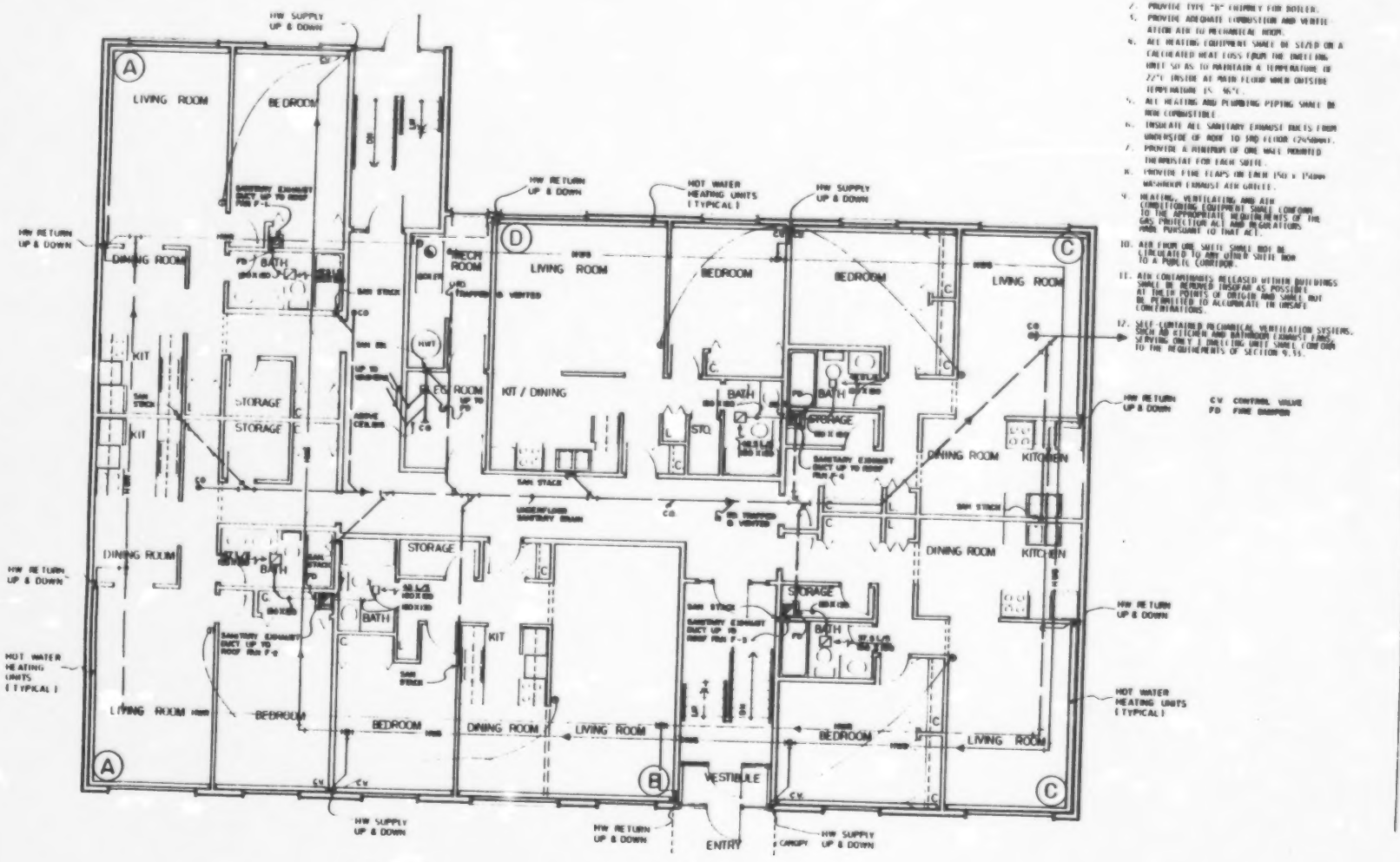
NOTES

1. PROVIDE GALVANIZED STEEL, GA. 26/24 AT THE HEAD OF ALL EXTERIOR OPENINGS.
2. WEEPING TILES SHALL BE LAID ON UNDISTURBED OR WELL COMPACTED SOIL SO THAT THE TOP OF THE WEEPING TILE IS BELOW THE UNDERSIDE OF THE FLOOR SLAB.
3. ROOF TRUSSES SHALL BE DESIGNED IN CONFORMANCE WITH PART 4 AND FOR THE APPROPRIATE GROUND SNOW LOADS STATED IN TABLE 2.2.1.B. (STANDATA 85.01 DRN)

ALBERTA HOUSE COST COMPARISON STUDY

SECTION & DETAILS

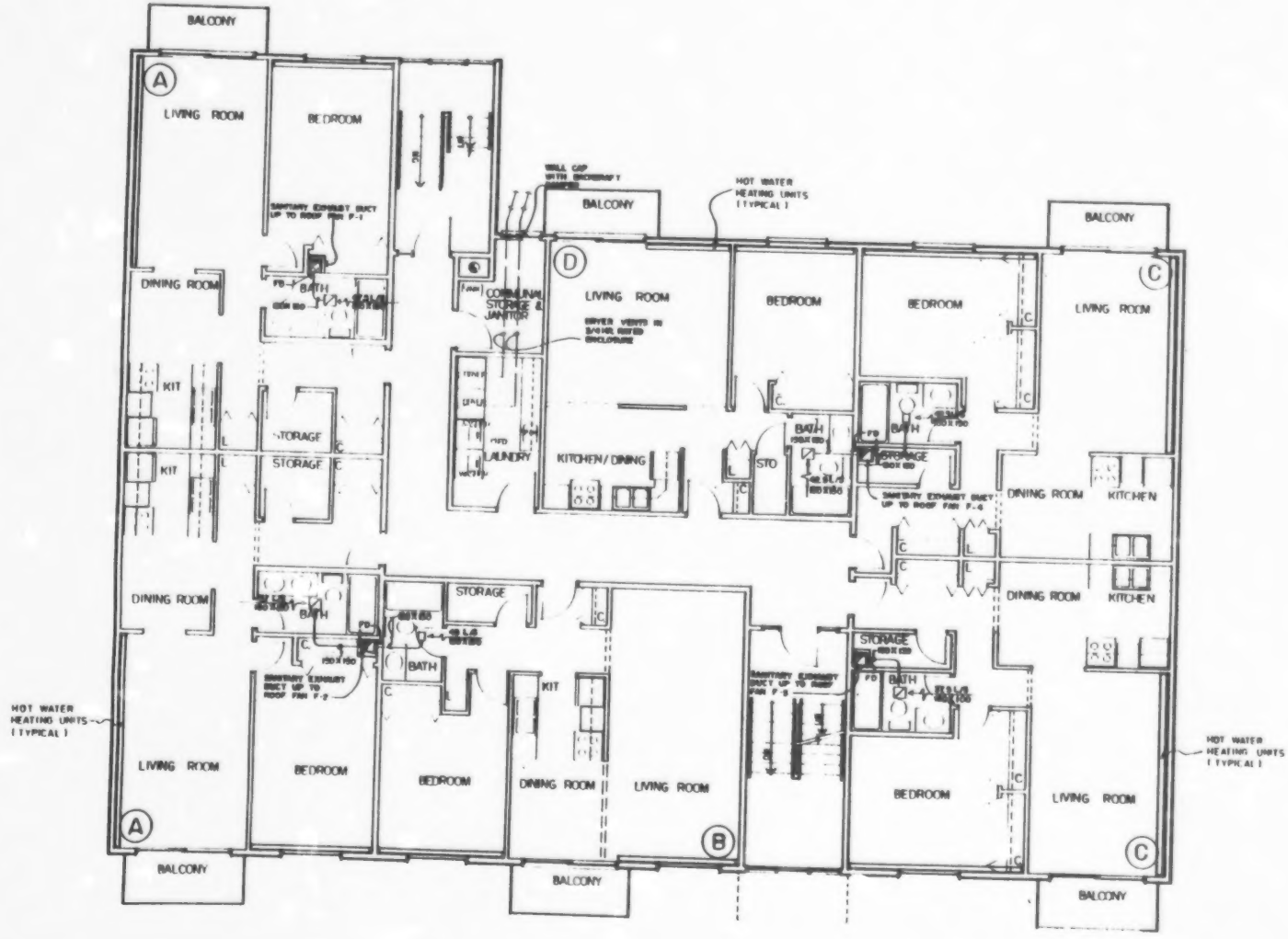
SCALES : AS SHOWN


MECHANICAL NOTES:
1. GAS FIRED HOT WATER HEATING BOILER SHALL BE INSTALLED IN ACCORDANCE WITH "THE GAS PROTECTION ACT AND REGULATIONS MADE PER SUANT TO THE ACT".
2. PROVIDE TYPE "B" CHIMNEY FOR BOILER.
3. PROVIDE ADEQUATE COMBUSTION AND VENTILATION AIR TO MECHANICAL ROOM.
4. ALL HEATING EQUIPMENT SHALL BE SIZED ON A CALCULATED HEAT LOSS FROM THE DWELLING UNIT SO AS TO MAINTAIN A TEMPERATURE OF 22°C INSIDE AT MAIN FLOOR WHEN OUTSIDE TEMPERATURE IS -6.5°C.
5. ALL HEATING AND PLUMBING PIPING SHALL BE NON COMBUSTIBLE.
6. INSULATE ALL SANITARY EXHAUST PIPES FROM UNDERSIDE OF ROOF TO 3RD FLOOR (2440mm).
7. PROVIDE A MINIMUM OF ONE WAY PROGRAMMABLE THERMOSTAT FOR EACH SUITE.
8. PROVIDE FIRE FLAPS ON EACH 150 x 150mm WASHROOM EXHAUST AIR GRILLE.
9. HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT SHALL CONFORM TO THE APPROPRIATE REQUIREMENTS OF THE GAS PROTECTION ACT AND REGULATIONS MADE PURSUANT TO THAT ACT.
10. AIR FROM ONE SUITE SHALL NOT BE CIRCULATED TO ANY OTHER SUITE NOR TO A PUBLIC CORRIDOR.
11. AIR CONTAMINANTS RELEASED WITHIN BUILDINGS SHALL BE REMOVED THROUGH AS DIRECTLY AS POSSIBLE AT THEIR POINTS OF ORIGIN AND SHALL NOT BE PERMITTED TO ACCUMULATE TO UNSAFE CONCENTRATIONS.
12. SELF CONTAINED MECHANICAL VENTILATION SYSTEMS, SUCH AS KITCHEN AND BATHROOM EXHAUST FANS, SERVING ONLY 1 DWELLING UNIT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 9.33.
CV CONTROL VALVE
FD FIRE DAMPER
HW SUPPLY UP & DOWN
HW RETURN UP & DOWN
HOT WATER HEATING UNITS (TYPICAL)
LIVING ROOM
BEDROOM
DINING ROOM
KIT
KIT / DINING
KITCHEN
BATH
STORAGE
STO.
REC ROOM
VESTIBULE
ENTRY
CANOPY
SAN STACK
SANITARY EXHAUST DUCT UP TO ROOF
UNDERFLOOR SANITARY DRAIN
CO
CV
FD
A
B
C
D

ALBERTA HOUSE COST COMPARISON STUDY

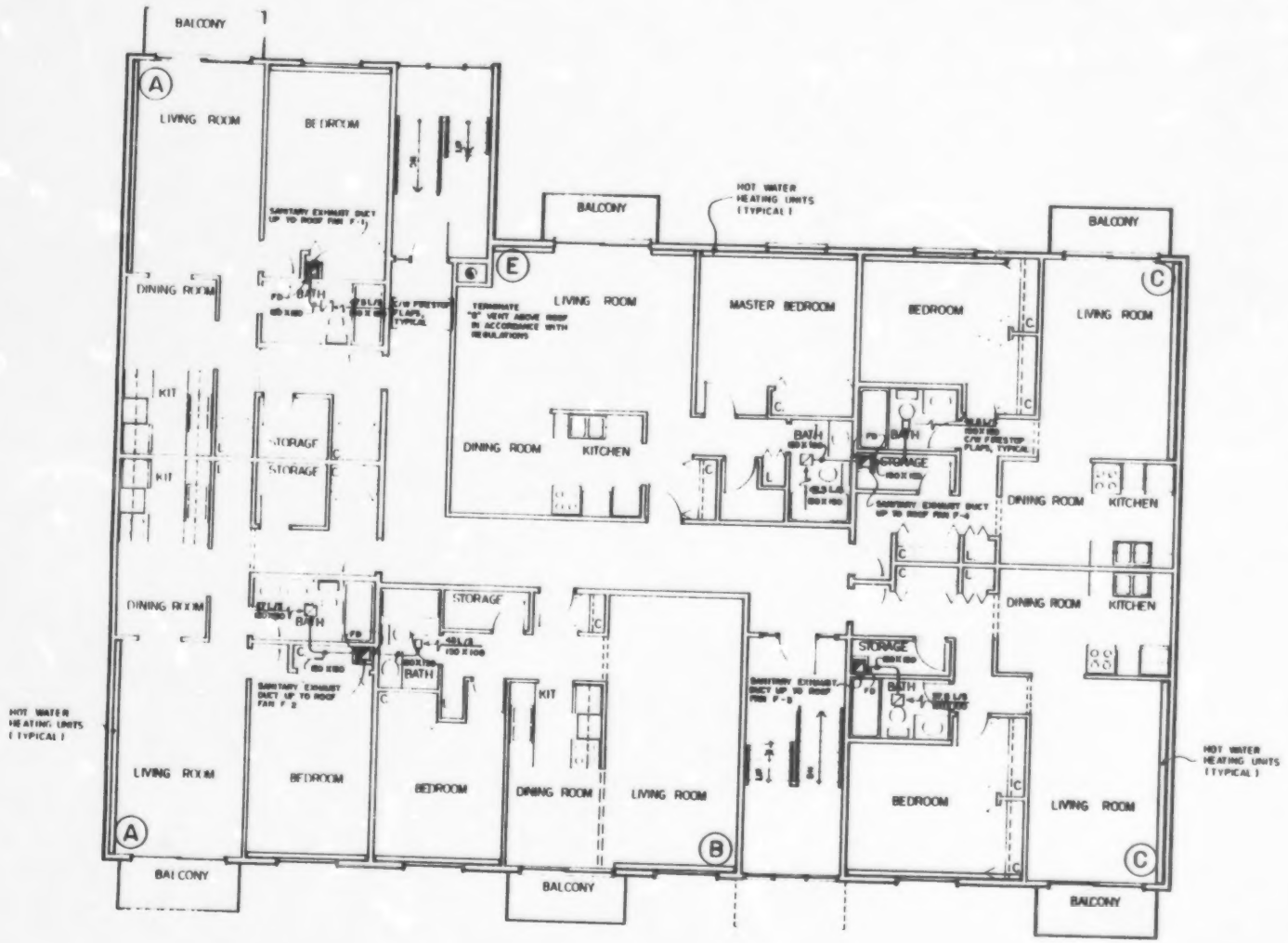
BASEMENT FLOOR PLAN
MECHANICAL LAYOUT
SCALE 1:100

0 1 2 3 4 5 6m



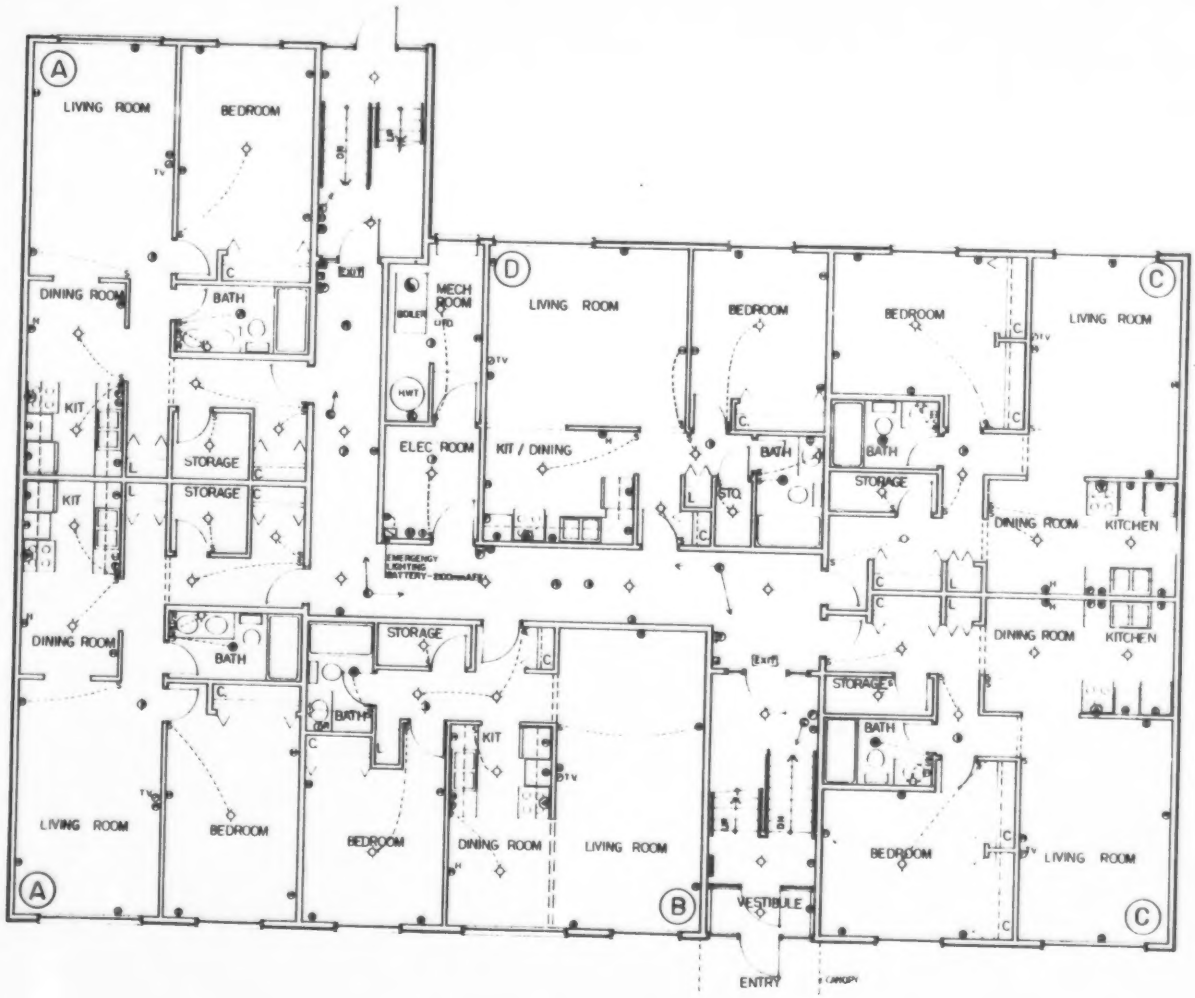
ALBERTA HOUSE COST COMPARISON STUDY

MAIN FLOOR PLAN
MECHANICAL LAYOUT
SCALE 1" = 10'



ALBERTA HOUSE COST COMPARISON STUDY

2ND & 3RD FLOOR PLAN
MECHANICAL LAYOUT
SCALE 1:50



ELECTRICAL LEGEND

- [EXIT] EXIT LIGHTS WITH 2 25W 12V/W AND 1 12V 5W EMERGENCY POWER SUPPLY
- EMERGENCY LIGHTING HEAD, 12V 12W
- EMERGENCY LIGHTING, 2 HEADS, 12V 12W
- SMOKE ALARM
- MANUAL FIRE ALARM STATION
- FIRE ALARM BELL, 150mm DIA
- METER
- END OF LINE RESISTOR
- MASTER FIRE ALARM PANEL C/W ANNUNCIATOR AND SELECTOR BATTERY AND 12V POWER SUPPLY AND AUTOMATIC CHARGER - 1 ZONE PER FLOOR, 2 ZONES
- STAIRS

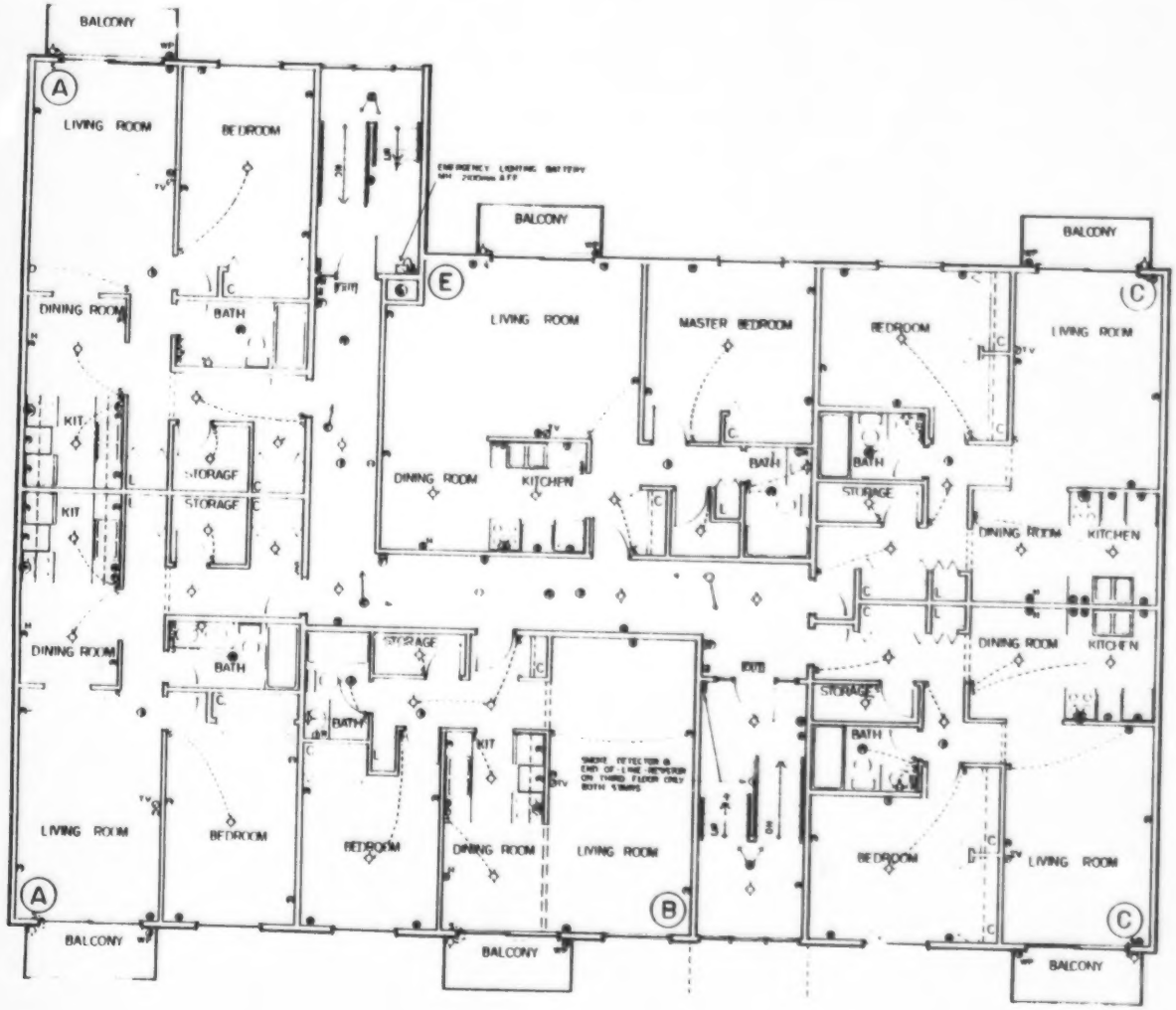
ALBERTA HOUSE COST COMPARISON STUDY

BASEMENT FLOOR PLAN
ELECTRICAL LAYOUT
SCALE 1:50

0 .5 1 2 3 4 5 6m

ALBERTA HOUSE COST COMPARISON STUDY

MAIN FLOOR PLAN
ELECTRICAL LAYOUT
SCALE 1:50



ALBERTA HOUSE COST COMPARISON STUDY

2ND & 3RD FLOOR PLAN
ELECTRICAL LAYOUT